

FINAL

ENVIRONMENTAL ASSESSMENT

FOR THE

CONSTRUCTION OF FACILITIES IN SUPPORT OF THE

343d TRAINING SQUADRON, 37th TRAINING GROUP,

SECURITY FORCES APPRENTICE COURSE AT JBSA-CAMP BULLIS, TEXAS



**US Army Corps
of Engineers®**



Prepared for:

**U.S. Army Corps of Engineers
Fort Worth District**

**U.S. Air Force
37th Training Group**

**JBSA-Camp Bullis
502D Mission Support Group**

November 2012

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TEXAS**



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of Engineers®**



Prepared for:

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37th Training Group

JBSA-Camp Bullis
502D Mission Support Group

Prepared by:

Gulf South Research Corporation
8081 GSRI Avenue
Baton Rouge, LA 70820

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FINDING OF NO SIGNIFICANT IMPACT

1.0 NAME OF PROPOSED ACTION

Construction of Facilities in Support of the 343d Training Squadron, 37th Training Group, Security Forces (SF) Apprentice Course at Joint Base San Antonio (JBSA)-Camp Bullis, Texas.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Purpose and Need for the Proposed Action: The United States (U.S.) Air Force (USAF) proposes the construction of facilities in support of the SF Apprentice Course on a 17-acre site at JBSA-Camp Bullis. The purpose of the Proposed Action is to increase the number of SF Apprentice Course students residing and training at JBSA-Camp Bullis at any one time from approximately 480 to 600 students. There are currently four teams totaling approximately 480 students that train at JBSA-Camp Bullis. However, due to dormitory constraints, only three teams totaling approximately 360 students actually reside at JBSA-Camp Bullis. The remaining training team, approximately 120 students, is required to travel to/from JBSA-Lackland and JBSA-Camp Bullis.

The Proposed Action is needed to update the SF Apprentice Course. Current needs of the career field demand better trained SF members in response to current world threats. This can be achieved by training in an enhanced deployment environment, which ensures greater training realism. Additionally, it would provide SF Apprentice Course training with the capability of future expansion and training needs at JBSA-Camp Bullis. The project would result in improved student living conditions, since currently there is forced triple bunking in the lone dormitory and use of overflow hutments. In addition, the anticipated final state for the SF Apprentice Course includes an additional training team, approximately 120 students, to train and reside at JBSA-Camp Bullis, for a total of 600 students training and residing at JBSA-Camp Bullis.

Proposed Action Alternative: The Proposed Action Alternative is the construction of facilities in support of the SF Apprentice Course on a 17-acre site at JBSA-Camp Bullis. The project would include construction of new pre-engineered buildings (PEB) and renovation of the existing dining facility to support the training course. The PEBs would be designed similar to the Medical Education and Training Campus PEBs that are located at JBSA-Camp Bullis. The existing dormitory facility would continue to be utilized and can house 120 students, while the new dormitory facilities would house the remaining 480 students. Other new facilities include academic classrooms, feeding facility, supply warehouse, restroom/shower/laundry facilities, parking lot, and after-action report/drill pad area. Increased food preparation and service capabilities are also needed, which require the renovation of the existing dining facility, known as the Defender Inn (Building 5420).

No Action Alternative: The Council on Environmental Quality (CEQ) regulations require the inclusion of the No Action Alternative as a standard to compare the environmental impacts of the proposed alternatives to the existing conditions. The No Action Alternative would maintain the environmental status quo. Under the No Action Alternative, the construction of additional facilities in support of the SF Apprentice Course would not occur, the non-standard student

living conditions would continue, and the number of students training would not increase. The No Action Alternative does not meet the purpose and need for the project, but is carried forward for analysis, as required by CEQ regulations.

3.0 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The Environmental Assessment (EA) provides an analysis of potential environmental impacts of the Proposed Action within the region of influence, which includes JBSA-Camp Bullis, Texas. No adverse impacts were identified on land use, safety and occupational health, cultural resources, socioeconomics, and environmental justice. Minor impacts would occur on local transportation, visual resources, utilities infrastructure, earth resources, noise, air quality, water resources, hazardous materials and wastes, and biological resources. The No Action Alternative would result in no change to existing conditions at JBSA-Camp Bullis.

Land Use: Approximately 17 acres would be converted from undeveloped land and open space currently used as training areas to land developed for USAF SF Apprentice Course facilities. Short-term land use disturbances would occur during the construction period; however, the overall land use would remain under governmental jurisdiction as a military training facility, and therefore, no long-term permanent impacts on land use and no land use incompatibilities with the nearby off-installation land uses would occur.

Aesthetics and Visual Resources: Approximately 55,000 square feet of new PEBs would be built in a previously undeveloped area. However, the siting of the facilities would not disrupt the natural areas of JBSA-Camp Bullis, and the viewshed of the cantonment area has already been altered by existing developments. Short-term visual impacts would occur during construction, but long-term impacts would be minor.

Air Quality: Temporary and minor increases in air pollution would occur during construction. Air emissions from the Proposed Action Alternative would not exceed Federal *de minimis* thresholds, and impacts on air quality in Bexar County would be minor.

Noise: Noise generated by construction activities would be intermittent and last for approximately 9 months, after which noise levels would return to ambient levels. The existing noise level from training activities and small and large caliber arms ranges must be considered in design of new facilities, and a noise level reduction of 25-30 decibels (dB) would be required for sleeping areas. In addition, any new construction should be designed to achieve an interior noise level of 45 dB for areas with noise sensitive uses, such as the dormitories. This could be achieved by using sound absorptive materials and insulation, which would reduce the complaint potential. Noise impacts as a result of the Proposed Action Alternative would be temporary and minor.

Water Resources: Under the Proposed Action Alternative, minor impacts would occur on surface water and groundwater. The proposed 17-acre site is not located within a floodplain and no wetlands or waters of the U.S. are present within the Proposed Action Alternative site. No significant impacts on floodplains or wetlands located downstream of the proposed site would occur with the implementation of Low Impact Development techniques following United

Facilities Criteria (UFC) 3-210-10 and Energy Independence and Security Act (EISA) Section 438.

Earth Resources: The Proposed Action Alternative would have minor impacts on earth resources at JBSC-Camp Bullis. Approximately 17 acres of locally common soils would be permanently disturbed and the amount of impermeable ground cover would increase. The use of Best Management Practices (BMP) and implementation of Low Impact Development techniques (UFC 3-210-10) and a Stormwater Pollution Prevention Plan (SWPPP) would mitigate these impacts. In addition, no adverse impacts on known karst features are expected to occur.

Biological Resources: Under the Proposed Action Alternative, minor impacts would occur on vegetation and wildlife. Approximately 17 acres of disturbed grassland/oak savanna and wildlife habitat would be permanently disturbed; however, the vegetation is locally common and the project would only remove a small percentage of similar habitats available on the installation. Every attempt would be made to retain viable native trees in and around the proposed PEBs. Designs would account for existing groups of live oaks and infrastructure would be designed and constructed in a way that preserves an undeveloped buffer of twice the drip line distance from the existing tree trunks. The site is located near golden-cheeked warbler (*Setophaga chrysoparia*) core habitat, but is not within core habitat or the 100-meter buffer surrounding the core habitat. Training restrictions are in place to limit exposure of protected species during sensitive periods. Several listed species could potentially use the project area as habitat; however, the site is located close to existing development and the species have not been detected in previous surveys. As a result, the likelihood of sensitive species utilizing the area is low. Pre-construction surveys would be performed on the project area to confirm the absence of sensitive species. Construction activities could expose unknown karst features and a qualified karst specialist shall inspect the site before and after clearing activities and prior to construction activities. There would be no effect on threatened or endangered species as a result of the Proposed Action Alternative.

Cultural Resources: Under the Proposed Action Alternative, the historic military concrete grenade practice structure (site 41BX827) would be demolished; however, it has been recommended ineligible for the National Register of Historic Places (NRHP). There would be no visual effects on any historic structures since none are located within the Area of Potential Effect. No adverse effects on cultural resources would occur.

Socioeconomics and Environmental Justice: Under the Proposed Action Alternative, no adverse impacts would occur on socioeconomics or environmental justice and protection of children. Minor positive impacts could occur as a result of construction-related hiring and increased revenues for local firms if materials were purchased locally.

Safety and Occupational Health: No adverse impacts on safety and occupational health would occur under the Proposed Action Alternative.

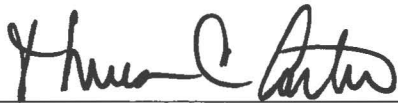
Transportation: Short-term minor impacts on traffic would occur during construction. However, no long-term impacts on transportation would occur under the Proposed Action Alternative.

Utilities Infrastructure: Under the Proposed Action Alternative, increased demand on utilities and infrastructure would occur. However, in the near term the increased demands that would occur as a result of the Proposed Action Alternative are within the capacity of utilities available at JBSA-Camp Bullis, and therefore the impacts would be minor. In the future, additional development on JBSA-Camp Bullis could result in necessary expansion of water sources and stormwater system improvements.

Hazardous Materials and Wastes: Under the Proposed Action Alternative, short-term minor impacts from solid and hazardous waste and materials are anticipated.

4.0 CONCLUSION

Based on the analysis of the EA conducted in accordance with the requirements of the National Environmental Policy Act (NEPA), the CEQ regulations, and Air Force Instruction 32-7061, which is hereby incorporated by reference, and after careful review of the potential impacts, I conclude that implementation of the Proposed Action Alternative would not result in significant impacts on the quality of the human or natural environment. Therefore, a Finding of No Significant Impact (FONSI) is warranted, and an Environmental Impact Statement is not required for this action.



THERESA C. CARTER
Brigadier General, USAF
Commander



Date

EXECUTIVE SUMMARY

Introduction: The United States (U.S.) Air Force (USAF), 37th Training Group has prepared this Environmental Assessment (EA) to address the potential effects, beneficial and adverse, resulting from the proposed construction of facilities in support of the Security Forces (SF) Apprentice Course at Joint Base San Antonio (JBSA)-Camp Bullis, Texas. The project would include construction of new pre-engineered buildings (PEB) and renovation of the existing dining facility to support the training course.

Background/Setting: JBSA-Camp Bullis is located on approximately 28,000 acres in Bexar County, Texas, just northwest of San Antonio, Texas. JBSA-Camp Bullis, formerly under U.S. Army command, is now part of the new Joint Base San Antonio that was mandated by the Base Closure and Realignment Commission in 2005. JBSA-Camp Bullis is currently under the command of the USAF and the 502 Mission Support Group headquartered at JBSA-Fort Sam Houston. JBSA-Camp Bullis generally is a training site for a transient population and provides training lands, ranges, and infrastructure in support of military operational requirements. JBSA-Camp Bullis is used as training grounds primarily by U.S. Army, USAF, and U.S. Marine Corps combat units, and for training of security forces in ground combat skills.

The new SF Apprentice Course facilities would be located on an approximately 17-acre site near the cantonment area on JBSA-Camp Bullis. A small portion of the 17-acre site falls within the cantonment area. The SF Apprentice Course site would be called Camp Maisey. The facilities would be constructed on the site. The existing dining facility (Building 5420), known as the Defender Inn, is adjacent to the proposed site and would be renovated to accommodate food preparation requirements for the increased student population.

Purpose and Need for the Proposed Action: The purpose of the Proposed Action is to increase the number of SF Apprentice Course students residing and training at JBSA-Camp Bullis at any one time from approximately 480 to 600 students. There are currently four teams totaling approximately 480 students that train at JBSA-Camp Bullis. However, due to dormitory constraints, only three teams totaling approximately 360 students reside at JBSA-Camp Bullis during training. The remaining training team, approximately 120 students, is required to travel to/from JBSA-Lackland and JBSA-Camp Bullis.

The Proposed Action is needed to update the SF Apprentice Course. Current needs of the career field demand better trained SF members in response to current world threats. This can be achieved by training in an enhanced deployment environment, which ensures greater training realism. Additionally, it would provide SF Apprentice Course training with the capability of future expansion and training needs at JBSA-Camp Bullis. The project would result in improved student living conditions, since currently there is forced triple bunking in the lone dormitory and use of overflow hutments. In addition, the anticipated final state for the SF Apprentice Course includes an additional training team, approximately 120 students, to train and reside at JBSA-Camp Bullis, for a total of 600 students training and residing at JBSA-Camp Bullis. The existing dormitory facility would house 120 students, while the new dormitory facilities would house the remaining 480 students. New classroom training facilities, restroom/shower/laundry facilities,

and increased food preparation and service capability are also required to increase the training and residency capacity from the current 360 students to the desired 600 students.

Proposed Action Alternative and No Action Alternative:

The Proposed Action Alternative is the construction of facilities in support of the SF Apprentice Course on a 17-acre site at JBSA-Camp Bullis. These facilities will include the following construction components:

- Four 3,600-square-foot (sf) PEB academic facilities
- One 3,600 sf PEB feeding facility (no food preparation)
- One 3,600 sf PEB supply warehouse
- Three 1,400 sf PEB restroom/shower/laundry facilities
- Twelve 2,400 sf PEB open bay dormitories to house 480 students (40 students per dormitory)
- One 81,000 sf asphalt parking lot to accommodate 116 vehicles
- One 4,800 sf after-action report area/drill pad (crushed rock base)
- Renovation of the existing dining facility (Defender Inn) to increase food preparation requirements

The PEBs would be designed similar to the Medical Education and Training Campus PEBs that are currently located at JBSA-Camp Bullis. The Defender Inn dining facility (Building 5420) would be renovated to accommodate the increase in food preparation requirements; however, no expansion is anticipated. The existing dormitory (Building 5413) and existing classrooms would continue to be used, and no improvements to these facilities would be necessary. There would be an additional 21 cadre or staff (7 per team) for the training course, but they would be assigned to JBSA-Lackland and would not reside in the proposed facilities at JBSA-Camp Bullis. The students would be rotated in weekly, based on a 3-week rotation schedule.

The Council on Environmental Quality (CEQ) regulations require inclusion of the No Action Alternative as a standard to compare the environmental impacts of the proposed alternatives to the existing conditions. The No Action Alternative would maintain the environmental status quo. Under the No Action Alternative, the construction of additional facilities in support of the SF Apprentice Course would not occur, the non-standard student living conditions would continue, and the number of training students would not increase. The No Action Alternative does not meet the purpose and need for the proposed project, but is carried forward for analysis, as required by CEQ regulations.

Summary of Environmental Consequences: Table ES-1 describes the potential impacts that would occur from the Proposed Action Alternative and No Action Alternative and any mitigation or environmental design measures necessary to limit impacts.

Table ES-1. Summary of Potential Impacts and Environmental Design Measures

Resource Area	No Action Alternative	Proposed Action Alternative	Environmental Design Measures
Land Use	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on land use would occur.	Approximately 17 acres would be converted from undeveloped land and open spaces currently used as training areas to land developed for USAF SF Apprentice Course facilities. Short-term land use disturbances would occur during the construction period; however, the overall land use would remain under governmental jurisdiction as a military training facility, and therefore no long-term permanent impacts on land use and no land use incompatibilities with the nearby off-installation land uses would occur.	No mitigation measures would be required for land use under the Proposed Action Alternative.
Aesthetics and Visual Resources	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on aesthetic or visual resources would occur.	Approximately 55,000 sf of new PEBs would be built in a previously undeveloped area. However, the siting would not disrupt the natural areas of JBSA-Camp Bullis and the watershed of the cantonment area has already been altered by existing developments. Short-term visual impacts would occur during construction, but long-term impacts would be minor.	No mitigation measures would be required for aesthetics and visual resources under the Proposed Action Alternative.
Air Quality	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on air quality would occur.	Temporary and minor increases in air pollution would occur during construction. Air emissions from the Proposed Action Alternative would not exceed Federal <i>de minimis</i> thresholds, and impacts on air quality in Bexar County would be minor.	During the construction of the proposed training facilities, proper and routine maintenance of all vehicles and other construction equipment will be implemented to ensure that emissions are within the design standards of all construction equipment. Dust suppression methods will be implemented to minimize fugitive dust, including wetting solutions applied to construction areas.

Table ES-1, continued

Resource Area	No Action Alternative	Proposed Action Alternative	Environmental Design Measures
Noise	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on noise would occur.	The noise impacts as a result of the Proposed Action would be minor. Noise generated by construction activities would be intermittent and last for approximately 9 months, after which noise levels would return to ambient levels. There is the potential for peak noise levels from the existing training and weapons ranges to disturb students in the dormitories and a low to moderate risk of complaints from the students occupying the dormitories. The existing noise level from training activities and small and large caliber arms ranges must be considered in design of new facilities and a noise level reduction of 25-30 decibels (dB) would be required for sleeping areas. In addition, any new construction should be designed to achieve an interior noise level of 45 dB for areas with noise sensitive uses, such as the dormitories.	The existing noise level from training activities and small and large caliber arms ranges must be considered in design of new facilities and a noise level reduction of 25-30 dB would be required for sleeping areas. In addition, any new construction should be designed to achieve an interior noise level of 45 dB for areas with noise sensitive uses, such as the dormitories. This could be achieved by using sound absorptive materials and insulation, which would reduce the complaint potential from the students.
Water Resources	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on water resources would occur.	Under the Proposed Action Alternative, minor impacts would occur on surface water and groundwater. The proposed 17-acre site is not located within a floodplain and no wetlands or waters of the U.S. are present within the Proposed Action Alternative site. No significant impacts on floodplains or wetlands located downstream of the proposed site would occur with the implementation of Low Impact Development techniques following United Facilities Criteria (UFC) 3-210-10 and Energy Independence and Security Act (EISA) Section 438.	An Edwards Aquifer Contributing Zone Plan and an Edwards Aquifer Protection Plan will be prepared, as required by the Texas Commission on Environmental Quality (TCEQ), in addition to the Stormwater Pollution Prevention Plan (SWPPP), spill prevention, control, and countermeasures plan (SPCCP), and the Pollution Prevention Plan (PPP). Best Management Practices (BMP) will be implemented to minimize impacts on surface waters and groundwater. Low Impact Development standards and techniques for stormwater management following UFC 3-210-10 guidance will be utilized during construction and will be required to maintain predevelopment hydrology on the site and prevent any net increase in stormwater runoff.

Table ES-1, continued

Resource Area	No Action Alternative	Proposed Action Alternative	Environmental Design Measures
Earth Resources	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on earth resources would occur.	The Proposed Action Alternative would have minor impacts on earth resources at JBSA-Camp Bullis. Approximately 17 acres of locally common soils would be permanently disturbed and the amount of impermeable ground cover would increase. In addition, no adverse impacts on known karst features would be expected to occur.	A SWPPP will be developed and implemented to control erosion and runoff during construction, and BMPs including the implementation of Low Impact Development techniques (UFC 3-210-10) will be in place to mitigate short-term impacts (e.g., erosion, sedimentation). Construction activities could expose unknown karst features and a qualified karst specialist shall inspect the site before and after clearing activities and prior to construction activities.
Biological Resources	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on biological resources would occur.	Under the Proposed Action Alternative, minor impacts would occur on vegetation and wildlife. Approximately 17 acres of disturbed grassland/oak savanna and wildlife habitat would be permanently disturbed; however, the vegetation is locally common and the project would only remove a small percentage of similar habitats available on the installation. Every attempt would be made to retain viable native trees in and around the proposed PEBs. Designs would account for existing groups of live oaks and infrastructure would be designed and constructed in a way that preserves an undeveloped buffer of twice the drip line distance from the existing tree trunks. The site is located near golden-cheeked warbler (<i>Setophaga chrysoparia</i>) core habitat, but is not within core habitat or the 100-meter buffer surrounding the core habitat. Training restrictions are in place to limit exposure of protected species during sensitive periods. Several listed species could potentially use the project area as habitat; however, the site is located close to existing development and the species have not been detected in previous surveys. As a result, the likelihood of sensitive species utilizing the area is low. There would be no effect on threatened or endangered species as a result of the Proposed Action Alternative.	Under the Air Education and Training Command (AETC) Forest and Tree Conservation Program, trees impacted by construction shall be saved or replaced. Fencing will be required around the preserved trees to prevent vehicle/construction damage. The golden-cheeked warbler and black-capped vireo (<i>Vireo atricapilla</i>) are managed and studied under the terms of the 28 July 2005 Biological Opinion from the U.S. Fish and Wildlife Service (USFWS), and include measures necessary to minimize incidental take of the golden-cheeked warbler and black-capped vireo. In addition, to minimize impacts on migratory birds protected under the Migratory Bird Treaty Act (MBTA), all site preparation will require either a pre-construction survey for bird activity, or that the work will be carried out in the fall and winter months, to coincide with the non-breeding season for these species. Also, a pre-construction survey would be performed on the project area to confirm the absence of sensitive species. Construction activities could expose unknown karst features and a qualified karst specialist shall inspect the site before and after clearing activities and prior to construction activities.

Table ES-1, continued

Resource Area	No Action Alternative	Proposed Action Alternative	Environmental Design Measures
Cultural Resources	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on cultural resources would occur.	Under the Proposed Action Alternative, historic concrete grenade practice structures (site 41BX827) would be demolished. However, the site has been recommended ineligible for the National Register of Historic Places (NRHP). There would be no visual effects on any historic structures since none are located within the Area of Potential Effect (APE). No adverse effects on cultural resources would occur.	During construction, if any archaeological evidence other than historic concrete grenade practice structures are unearthed, then JBSA-Camp Bullis archaeologists and Texas State Historic Preservation Office (SHPO) will be notified. In addition, any discovery of human remains will be treated in accordance with Native American Graves Protection and Repatriation Act (NAGPRA) and the standard operating procedures (SOP) set out in the Integrated Cultural Resources Management Plan (ICRMP).
Socioeconomics and Environmental Justice	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on socioeconomic or environmental justice would occur.	Under the Proposed Action Alternative, no adverse impacts would occur on socioeconomic or environmental justice and protection of children. Minor positive impacts could occur as a result of construction-related hiring and increased revenues for local businesses.	No mitigation measures would be required for socioeconomic or environmental justice under the Proposed Action Alternative.
Safety and Occupational Health	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on safety and occupational health would occur.	No adverse impacts on safety and occupational health would occur under the Proposed Action Alternative.	No mitigation measures would be required for safety and occupational health under the Proposed Action Alternative.
Transportation	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on transportation would occur.	Short-term minor impacts on traffic would occur during construction. However, no long-term impacts on transportation would occur under the Proposed Action Alternative.	No mitigation measures would be required for transportation under the Proposed Action Alternative.

Table ES-1, continued

Resource Area	No Action Alternative	Proposed Action Alternative	Environmental Design Measures
Utilities Infrastructure	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on utilities would occur.	Under the Proposed Action Alternative, increased demand on utilities and infrastructure would occur. However, in the near term the increased demands that would occur as a result of the Proposed Action Alternative are within the capacity of utilities available at JBSA-Camp Bullis, and therefore the impacts would be minor. In the future, additional development on JBSA-Camp Bullis could result in necessary expansion of water sources and stormwater system improvements.	A stormwater detention pond and compliance with Edwards Aquifer Protection Plan, as per JBSA-Fort Sam Houston and TCEQ requirements, will be needed because the project area is over 5 acres. In addition, Low Impact Development techniques following UFC 3-210-10 will be implemented to handle runoff at its source or point of origination and to mitigate impacts from stormwater runoff.
Hazardous Materials and Wastes	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on hazardous materials and wastes would occur.	Under the Proposed Action Alternative, short-term minor impacts from solid and hazardous waste and materials would occur.	During construction, the potential exists for accidental releases of petroleum, oil, and lubricants (POL) at the proposed construction site; however, the POL storage will include primary and secondary containment measures. Cleanup materials (e.g., oil mops) will also be maintained at the construction site to allow immediate action in case an accidental spill occurs. Drip pans will be provided for stationary equipment to capture any POL accidentally spilled during maintenance activities or leaks from the equipment. In addition, an SPCCP and an Installation Spill Contingency Plan (ISCP) are in place at JBSA-Camp Bullis, and all personnel will be briefed on the implementation and responsibilities of these plans.

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ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
ACM	Asbestos-containing Material
ADT	Average Daily Traffic
AETC	Air Education and Training Command
APE	Area of Potential Effect
AST	Aboveground Storage Tank
BMP	Best Management Practice
CAIS	Chemical Agent Identification Sets
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalency
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted Decibel
dbh	Diameter at Breast Height
DERP	Defense Environmental Restoration Program
DMSET	Deployable Medical Systems Equipment for Training
DoD	Department of Defense
EA	Environmental Assessment
EISA	Energy Independence and Security Act
EO	Executive Order
EOD	Explosive Ordnance Disposal
ES	Executive Summary
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FM	Farm to Market Road
FONSI	Finding of No Significant Impact
FPCON	Force Protection Condition System
FR	Federal Register
GHG	Greenhouse Gases
GIS	Geographic Information System
HFC	Hydrochlorofluorocarbons
HUD	U.S. Department of Housing and Urban Development
I	Interstate
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
ISCP	Installation Spill Contingency Plan
ISD	Independent School District

JBSA	Joint Base San Antonio
KFR	Karst Fauna Regions
LBP	Lead-based Paint
LEED	Leadership in Energy and Environmental Design
MBTA	Migratory Bird Treaty Act
mg/m ³	Milligrams per Cubic Meter
MILCON	Military Construction
MMRP	Military Munitions Response Program
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
N ₂ O	Nitrous Oxide
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxide
NOA	Notice of Availability
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O ₃	Ozone
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
Pb	Lead
PEB	Pre-Engineered Building
PK15(met)	Peak Noise Metric
PL	Public Law
PM-2.5	Particulate Matter Less Than 2.5 Microns
PM-10	Particulate Matter Less Than 10 Microns
POL	Petroleum, Oil, and Lubricants
ppb	Parts Per Billion
ppm	Parts Per Million
PPP	Pollution Prevention Plan
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
SAT	San Antonio International Airport
sf	Square Foot
SF	Security Forces
SHPO	State Historic Preservation Office
SO ₂	Sulfur Dioxide
SOP	Standard Operating Procedures
SPCCP	Spill Prevention, Control, and Countermeasures Plan
SWPPP	Stormwater Pollution Prevention Plan
TCE	Trichloroethylene
TCEQ	Texas Commission on Environmental Quality
TPWD	Texas Parks and Wildlife Department

TxDOT	Texas Department of Transportation
UFC	United Facilities Criteria
U.S.	United States
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compounds
µg/m ³	Micrograms per Cubic Meter

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SECTION 1.0
PURPOSE AND NEED FOR THE PROPOSED ACTION



1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The United States (U.S.) Air Force (USAF), 37th Training Group has prepared this Environmental Assessment (EA) to address the potential effects, beneficial and adverse, resulting from the proposed construction of facilities in support of the Security Forces (SF) Apprentice Course at Joint Base San Antonio (JBSA)-Camp Bullis, Texas (Figure 1-1). The project would include construction of new pre-engineered buildings (PEB) and renovation of the existing dining facility to support the training course.

1.2 STUDY LOCATION

JBSA-Camp Bullis is located on approximately 28,000 acres in Bexar County, Texas, just northwest of San Antonio, Texas (see Figure 1-1). JBSA-Camp Bullis, formerly under U.S. Army command, is now part of the new Joint Base San Antonio that was mandated by the Base Closure and Realignment Commission in 2005. JBSA-Camp Bullis is currently under the command of the USAF and the 502 Mission Support Group headquartered at JBSA-Fort Sam Houston. JBSA-Camp Bullis generally is a training site for a transient population and provides training lands, ranges, and infrastructure in support of military operational requirements. JBSA-Camp Bullis is used primarily as training grounds by U.S. Army, USAF, and U.S. Marine Corps combat units and for training of security forces in ground combat skills.

The new SF Apprentice Course facilities would be located on an approximately 17-acre site near the cantonment area on JBSA-Camp Bullis (Figure 1-2). A small portion of the 17-acre site falls within the cantonment area. The SF Apprentice Course site would be called Camp Maisey. The facilities would be constructed on the site. The existing dining facility (Building 5420), known as the Defender Inn, is adjacent to the proposed site and would be renovated to accommodate food preparation requirements for the increased student population (see Figure 1-2).

1.3 PURPOSE AND NEED

The purpose of the Proposed Action is to increase the number of SF Apprentice Course students residing and training at JBSA-Camp Bullis at any one time from approximately 480 to 600 students. There are currently four teams totaling approximately 480 students that train at JBSA-Camp Bullis. However, due to dormitory constraints, only three teams totaling approximately 360 students actually reside at JBSA-Camp Bullis. The remaining training team, approximately 120 students, is required to travel to/from JBSA-Lackland and JBSA-Camp Bullis.

The Proposed Action is needed to update the SF Apprentice Course. Current needs of the career field demand better trained SF members in response to current world threats. This can be achieved by training in an enhanced deployment environment, which ensures greater training realism. Additionally, it would provide SF Apprentice Course training with the capability of future expansion and training needs at JBSA-Camp Bullis. The project would result in improved student living conditions, since currently there is forced triple bunking in the lone dormitory and

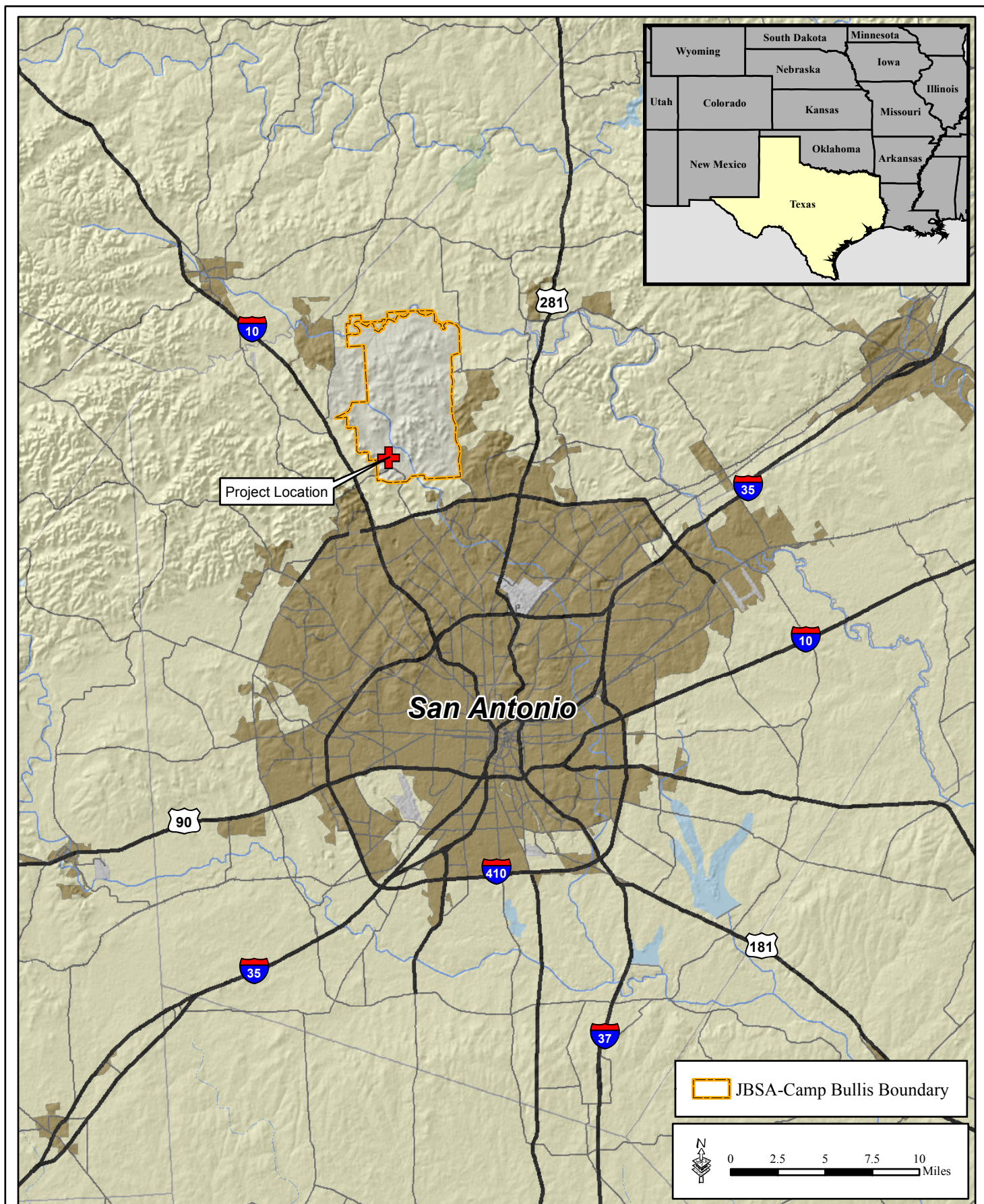


Figure 1-1: Vicinity Map



Figure 1-2: JBSA-Camp Bullis Security Forces Apprentice Course Site Location Map

use of overflow hutments. In addition, the anticipated final state for the SF Apprentice Course includes an additional training team, approximately 120 students, to train and reside at JBSA-Camp Bullis, for a total of 600 students training and residing at JBSA-Camp Bullis. The existing dormitory facility would house 120 students, while the new dormitory facilities would house the remaining 480 students. New classroom training and restroom/shower/laundry facilities and increased food preparation and service capability would also be required to increase the training and residency capacity from the current 360 students to the desired 600 students.

1.4 SCOPE OF THE ANALYSIS

The scope of the EA includes the analysis of effects resulting from the construction and renovation of facilities at JBSA-Camp Bullis for the proposed SF Apprentice Course and the increase in SF Apprentice Course students training and residing at JBSA-Camp Bullis. The EA identifies, documents, and evaluates the proposed alternatives and the potential effects on the natural and human environment.

1.5 APPLICABLE ENVIRONMENTAL GUIDANCE, STATUTES, AND REGULATIONS

This EA is prepared by the USAF in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code [USC] 4321-4347) and the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508), as well as 32 CFR Part 989, *Environmental Impact Analysis Process* for the USAF, and other pertinent environmental statutes, regulations, and compliance requirements, as summarized in Table 1-1.

1.6 PUBLIC PARTICIPATION

The USAF invites public participation in the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision making. The USAF set forth a scoping process that informs local, state, tribal, and Federal agencies of proposed projects. All agencies, organizations, and members of the public with a potential interest in the Proposed Action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decision-making process.

Public participation opportunities with respect to the EA and decision making on the Proposed Action are guided by 32 CFR Part 989. The EA and Draft Finding of No Significant Impact (FONSI) were made available to the public for 30 days beginning on September 21, 2012. A notice of availability (NOA) for public review of the Draft EA was published in the San Antonio Express-News and the Draft EA was made available for public review at the local libraries (Appendix B). At the end of the 30-day public review period, the USAF considered any comments submitted by individuals, agencies, or organizations on the Proposed Action, the EA, or the Draft FONSI. As appropriate, the USAF may then execute the FONSI and proceed with implementation of the Proposed Action. If it is determined prior to issuance of a Final FONSI that implementation of the Proposed Action would result in significant impacts, the USAF will publish in the *Federal Register* (FR) a Notice of Intent (NOI) to prepare an Environmental

Table 1-1. Relevant Policy Documents, Invoking Actions, Regulatory Requirements, and Status of Compliance *

Policy Document	Administrative Authority	Invoking Action	Requirements for Compliance	Status of Compliance
Archaeological Resources Protection Act of 1979 16 USC § 470 et seq.	Department of Interior	Excavation, removal, damage, or other alteration or defacing; or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands 43 CFR 7.4	Because activities are exclusively for purposes other than the excavation and/or removal of archaeological resources, even though those activities might incidentally result in the disturbance of archaeological resources, no permit shall be required	Full compliance
Clean Air Act of 1963 16 USC § 470 et seq.	U.S. Environmental Protection Agency (USEPA)	Any Federal action where the total of direct and indirect emissions in a non-attainment area would equal or exceed the provided rates 40 CFR 51	Determination of project emission levels. If determined to be less than <i>de minimis</i> thresholds, a determination of conformity with an applicable implementation plan is not required	Full compliance; emissions would be below <i>de minimis</i> thresholds.
Comprehensive Environmental Response, Compensation and Liability Act of 1980 42 USC § 9601 et seq.	USEPA	Release or threatened release of a hazardous substance 40 CFR 302	Development of emergency response plans, notification, and cleanup	To be completed by USAF during design and operation
Endangered Species Act (ESA) of 1973 16 USC § 1531 et seq.	U.S. Fish and Wildlife Service (USFWS)	All Federal actions in which there is discretionary involvement or control potentially impacting species listed under the ESA 50 CFR 402.03	Determination of “no jeopardy” to listed species and no destruction or adverse modification of critical habitat through consultation with the USFWS	Full compliance; no protected species are anticipated to be impacted.
Farmland Protection Policy Act of 1981 7 USC § 9601 et seq.	Natural Resources Conservation Service	Any Federal action that impacts prime or unique farmland soils 7 CFR 658	Identify and take into account the adverse effects on the protection of farmland	Full compliance; no prime or unique farmlands impacted.

Table 1-1, continued

Policy Document	Administrative Authority	Invoking Action	Requirements for Compliance	Status of Compliance
Federal Water Pollution Control Act of 1977 (also known as Clean Water Act or CWA) 33 USC § 1251 et seq.	USEPA	Storage, use, or consumption of oil and oil products, which could discharge oil in quantities that could affect water quality standards, into or upon the navigable waters of the U.S. 40 CFR 112	Preparation of a Spill Prevention, Control, and Countermeasures Plan (SPCCP)	To be completed by USAF or contractor
		Discharge of pollutants that could impact surface water or groundwater 40 CFR 122	Obtain a general National Pollutant Discharge Elimination System (NPDES) Permit	To be completed by USAF or contractor
Migratory Bird Treaty Act of 1918 16 USC § 703	USEPA, U.S. Army Corps of Engineers (USACE) USFWS	Excavation, fill or discharge of materials into wetlands 40 CFR 230 § 404	Identification of wetlands and application for permit, if necessary	Full compliance; no wetlands are present within the project site.
		Any action resulting in the “take” of any migratory bird, or the parts, nests, or eggs of such bird 50 CFR 21.11	Avoidance of take or application for permit	Full compliance would be achieved upon implementation of construction activities. Proposed surveys prior to any construction beginning during nesting season.
National Historic Preservation Act of 1966 16 USC § 470 et seq.	Advisory Council on Historic Preservation (ACHP) through the State Historic Preservation Officer (SHPO)	Any Federal undertaking that could impact cultural resources 36 CFR 800.3	Assessment of effects through consultation with the ACHP and SHPO; Section 106 consultation	Full compliance; no adverse effects on cultural resources anticipated.
Occupational Health and Safety Act of 1970 29 USC § 651 et seq.	Occupational Safety and Health Administration, Department of Labor	Employees performing in a workplace 29 CFR 1910.5 (a)	Adherence to occupational health and safety standards	To be completed by USAF during design and operation

Table 1-1, continued

Policy Document	Administrative Authority	Invoking Action	Requirements for Compliance	Status of Compliance
Resource Conservation and Recovery Act (RCRA) of 1976 42 USC § 6901 et seq.	USEPA	Collection of residential, commercial, and institutional solid wastes and street wastes 40 CFR 243	Adherence to guidelines for waste storage and safety and collection equipment, frequency, and management	To be completed by USAF during design and operation
		Procurement of more than \$10,000 annually of products containing recovered materials 40 CFR 247	Procure designated items composed of the highest percentage of recovered materials practicable	To be completed by USAF during design and operation
		Recovery of resources from solid waste through source separation 40 CFR 246	Recovery of high-grade paper, residential materials, and corrugated containers	To be completed by USAF during design and operation
RCRA of 1976 42 USC § 6901 et seq.	USEPA	Treatment, storage, or disposal of hazardous waste on-site 40 CFR 262.10(c)	Determination of hazardous or non-hazardous nature of solid waste, obtain a USEPA identification number if necessary, properly accumulate hazardous waste, and maintain a record	To be completed by USAF during design and operation
Executive Order (EO) 11988: Floodplain Management 42 FR 26,951 (May 24, 1977)	Water Resources Council, Federal Emergency Management Agency	Acquisition and management of Federal lands; Federally undertaken, financed, or assisted construction; conducting Federal activities affecting land use in a floodplain	Determine whether the Proposed Action will occur in a floodplain, then evaluate potential effects of any action in a floodplain	Full compliance; project site not located within a floodplain.
EO 11990: Protection of Wetlands 42 FR 26,691 (May 24, 1977)	USACE, USEPA	Acquisition and management of Federal lands; Federally undertaken, financed, or assisted construction; conducting Federal activities affecting wetlands	Take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands	Full compliance; no wetlands are present within the project site.

Table 1-1, continued

Policy Document	Administrative Authority	Invoking Action	Requirements for Compliance	Status of Compliance
EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations 59 FR 7629 (February 11, 1994)	USEPA	All programs or activities receiving Federal financial assistance that affect human health or the environment	Analyze the environmental effects, including human health, economic, and social effects of USAF actions, including effects on minority communities and low-income communities	Full compliance
EO 13045: Protection of Children from Environmental Health Risks and Safety Risks 62 FR 19883 (April 23, 1997)	USEPA	Any Federal action potentially affecting health and safety of children	Identify and assess environmental health risks and safety risks that may disproportionately affect children	Full compliance
EO 13423: Federal Environmental, Energy, and Transportation Management 72 FR 3919 (January 26, 2007)	USEPA, Department of Energy	Acquisition planning, development of procurement programs, operation of a Federal facility	Incorporate waste prevention and recycling in the agency's daily operations and work to increase and expand markets for recovered materials through greater Federal government preference and demand for such products	To be completed by USAF during design and operation
EO 13514: Federal Leadership in Environmental, Energy, and Economic Performance 74 FR 52117 (October 8, 2009)	CEQ	Construction, operation, and maintenance of a Federal facility; aircraft operations and worker commutes	Increase energy efficiency; measure, report, and reduce greenhouse gas emissions from direct and indirect activities; conserve and protect water resources through efficiency, reuse, and stormwater management; eliminate waste, recycle, and prevent pollution; design, construct, maintain, and operate high performance sustainable buildings in sustainable locations	To be completed by USAF during design and operation

*Not All Inclusive

Impact Statement, commit to mitigation actions sufficient to reduce impacts to less than significant levels, or not implement the Proposed Action.

1.7 REPORT ORGANIZATION

The EA is organized into seven sections. Section 1.0 includes the introduction, while Section 2.0 describes the Proposed Action and all alternatives considered for the project. Section 3.0 discusses the environmental resources potentially affected by the project and the environmental consequences for each of the viable alternatives, and Section 4.0 discusses cumulative impacts. Environmental design measures, or mitigation measures, are discussed in Section 5.0. Sections 6.0 and 7.0 present a list of references cited in the document and a list of the persons involved in the preparation of the EA, respectively. Pertinent correspondence generated during the preparation of the EA is provided in the appendices.

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SECTION 2.0
PROPOSED ACTION AND ALTERNATIVES



2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION ALTERNATIVE

The Proposed Action includes the construction of facilities in support of the SF Apprentice Course on a 17-acre site at JBSA-Camp Bullis (Photograph 2-1). These facilities would include the following construction components:

- Four 3,600-square-foot (sf) PEB academic facilities
- One 3,600 sf PEB feeding facility (no food preparation)
- One 3,600 sf PEB supply warehouse
- Three 1,400 sf PEB restroom/shower/laundry facilities
- Twelve 2,400 sf PEB open bay dormitories to house 480 students (40 students per dormitory)
- One 81,000 sf asphalt parking lot to accommodate 116 vehicles
- One 4,800 sf after-action report area/drill pad (crushed rock base)
- Renovation of the existing dining facility (Defender Inn) to increase food preparation requirements



Photograph 2-1. General overview of the 17-acre site for the proposed Security Forces Apprentice Course

The PEBs would be designed similar to the Medical Education and Training Campus PEBs that are located on JBSA-Camp Bullis (Photograph 2-2). The Defender Inn dining facility (Building 5420) would be renovated to accommodate the increase in food preparation requirements; however, no expansion is anticipated (Photograph 2-3). The existing dormitory (Building 5413) and existing classrooms would continue to be used, and no improvements to these facilities would be necessary. There would be an additional 21 cadre or staff (7 per team) for the training course, but they would be assigned to JBSA-Lackland and would not reside in the facilities on JBSA-Camp Bullis. Each week a team of up to 120 students would be rotated in/out of JBSA-Camp Bullis, based on a 3-week rotation schedule.



Photograph 2-2. Example of proposed PEB



Photograph 2-3. The existing dining facility (Defender Inn) at JBSA-Camp Bullis

2.2 NO ACTION ALTERNATIVE

CEQ regulations require inclusion of the No Action Alternative as a standard to compare the environmental impacts of the proposed alternatives to the existing conditions. The No Action Alternative would maintain the environmental status quo. Under the No Action Alternative, the construction of additional facilities in support of the SF Apprentice Course would not occur, the non-standard student living conditions would continue, and the number of training students would not increase. The No Action Alternative does not meet the purpose and need for the proposed project, but will be carried forward for analysis, as required by the CEQ regulations.

2.3 ALTERNATIVES CONSIDERED AND ELIMINATED FROM FURTHER CONSIDERATION

Other types of buildings were considered but were eliminated. The use of hardened facilities through military construction (MILCON) was proposed but found to be cost-prohibitive. The use of tents was also considered but was disapproved due to the proximity to the cantonment area. No other sites outside of the 17-acre JBSA-Camp Bullis site were considered for this requirement due to the need for close proximity to the current SF Apprentice Course training/support facilities at JBSA-Camp Bullis.

2.4 COMPARATIVE SUMMARY OF IMPACTS

The No Action Alternative and Proposed Action Alternative are carried forward for analysis. Potential environmental impacts of the Proposed Action would be those associated with the construction/renovation of the proposed SF Apprentice Course facilities. Table 2-1 presents a summary of the potential impacts associated with the Proposed Action Alternative and the No Action Alternative.

Table 2-1. Summary of Potential Impacts of the Proposed Action and No Action Alternative and Environmental Design Measures

Resource Area	No Action Alternative	Proposed Action Alternative	Environmental Design Measures
Land Use	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on land use would occur.	Approximately 17 acres would be converted from undeveloped land and open spaces currently used as training areas to land developed for USAF SF Apprentice Course facilities. Short-term land use disturbances would occur during the construction period; however, the overall land use would remain under governmental jurisdiction as a military training facility, and therefore no long-term permanent impacts on land use and no land use incompatibilities with the nearby off-installation land would occur.	No mitigation measures would be required for land use under the Proposed Action Alternative.
Aesthetics and Visual Resources	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on aesthetic or visual resources would occur.	Approximately 55,000 sf of new PEBs would be built in a previously undeveloped area. However, the siting would not disrupt the natural areas of JBSA-Camp Bullis and the watershed of the cantonment area has already been altered by existing developments. Short-term visual impacts would occur during construction, but long-term impacts would be minor.	No mitigation measures would be required for aesthetics and visual resources under the Proposed Action Alternative.
Air Quality	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on air quality would occur.	Temporary and minor increases in air pollution would occur during construction. Air emissions from the Proposed Action Alternative would not exceed Federal <i>de minimis</i> thresholds, and impacts on air quality in Bexar County would be minor.	During the construction of the proposed training facilities, proper and routine maintenance of all vehicles and other construction equipment will be implemented to ensure that emissions are within the design standards of all construction equipment. Dust suppression methods will be implemented to minimize fugitive dust, including wetting solutions applied to construction areas.

Table 2-1, continued

Resource Area	No Action Alternative	Proposed Action Alternative	Environmental Design Measures
Noise	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on noise would occur.	The noise impacts as a result of the Proposed Action would be minor. Noise generated by construction activities would be intermittent and last for approximately 9 months, after which noise levels would return to ambient levels. There is the potential for peak noise levels from the existing training and weapons ranges to disturb students in the dormitories and a low to moderate risk of complaints from the students occupying the dormitories. The existing noise level from training activities and small and large caliber arms ranges must be considered in design of new facilities and a noise level reduction of 25-30 decibels (dB) would be required for sleeping areas. In addition, any new construction should be designed to achieve an interior noise level of 45 dB for areas with noise sensitive uses, such as the dormitories.	The existing noise level from training activities and small and large caliber arms ranges must be considered in design of new facilities and a noise level reduction of 25-30 dB would be required for sleeping areas. In addition, any new construction should be designed to achieve an interior noise level of 45 dB for areas with noise sensitive uses, such as the dormitories. This could be achieved by using sound absorptive materials and insulation, which would reduce the complaint potential from the students.
Water Resources	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on water resources would occur.	Under the Proposed Action Alternative, minor impacts would occur on surface water and groundwater. The proposed 17-acre site is not located within a floodplain and no wetlands or waters of the U.S. are present within the Proposed Action Alternative site. No significant impacts on floodplains or wetlands located downstream of the proposed site would occur with the implementation of Low Impact Development techniques following United Facilities Criteria (UFC) 3-210-10 and Energy Independence and Security Act (EISA) Section 438.	An Edwards Aquifer Contributing Zone Plan and an Edwards Aquifer Protection Plan will be prepared, as required by the Texas Commission on Environmental Quality (TCEQ), in addition to the Stormwater Pollution Prevention Plan (SWPPP), spill prevention, control, and countermeasures plan (SPCCP), and the Pollution Prevention Plan (PPP). Best Management Practices (BMP) will be implemented to minimize impacts on surface waters and groundwater. Low Impact Development standards and techniques for stormwater management following UFC 3-210-10 guidance will be utilized during construction and will be required to maintain predevelopment hydrology on the site and prevent any net increase in stormwater runoff.

Table 2-1, continued

Resource Area	No Action Alternative	Proposed Action Alternative	Environmental Design Measures
Earth Resources	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on earth resources would occur.	The Proposed Action Alternative would have minor impacts on earth resources at JBSA-Camp Bullis. Approximately 17 acres of locally common soils would be permanently disturbed and the amount of impermeable ground cover would increase. In addition, no adverse impacts on known karst features would be expected to occur.	A SWPPP will be developed and implemented to control erosion and runoff during construction, and BMP including the implementation of Low Impact Development techniques (UFC 3-210-10) will be in place to mitigate short-term impacts (e.g., erosion, sedimentation). Construction activities could expose unknown karst features and a qualified karst specialist shall inspect the site before and after clearing activities and prior to construction activities.
Biological Resources	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on biological resources would occur.	Under the Proposed Action Alternative, minor impacts would occur on vegetation and wildlife. Approximately 17 acres of disturbed grassland/oak savanna and wildlife habitat would be permanently disturbed; however, the vegetation is locally common and the project would only remove a small percentage of similar habitats available on the installation. Every attempt would be made to retain viable native trees in and around the proposed PEBs. Designs would account for existing groups of live oaks and infrastructure would be designed and constructed in a way that preserves an undeveloped buffer of twice the drip line distance from the existing tree trunks. The site is located near golden-cheeked warbler (Setophaga chrysoparia) core habitat, but is not within core habitat or the 100-meter buffer surrounding the core habitat. Training restrictions are in place to limit exposure of protected species during sensitive periods. Several listed species could potentially use the project area as habitat; however, the site is located close to existing development and the species have not been detected in previous surveys. As a result, the likelihood of sensitive species utilizing the area is low. There would be no effect on threatened or endangered species as a result of the Proposed Action Alternative.	Under the Air Education and Training Command (AETC) Forest and Tree Conservation Program, trees impacted by construction shall be saved or replaced. Fencing will be required around the preserved trees to prevent vehicle/construction damage. The golden-cheeked warbler and black-capped vireo (<i>Vireo atricapilla</i>) are managed and studied under the terms of the 28 July 2005 Biological Opinion from the U.S. Fish and Wildlife Service (USFWS), and include measures necessary to minimize incidental take of the golden-cheeked warbler and black-capped vireo. In addition, to minimize impacts on migratory birds protected under the Migratory Bird Treaty Act (MBTA), all site preparation will require either a pre-construction survey for bird activity, or that the work will be carried out in the fall and winter months, to coincide with the non-breeding season for these species. Also, a pre-construction survey would be performed on the project area to confirm the absence of sensitive species. Construction activities could expose unknown karst features and a qualified karst specialist shall inspect the site before and after clearing activities and prior to construction activities.

Table 2-1, continued

Resource Area	No Action Alternative	Proposed Action Alternative	Environmental Design Measures
Cultural Resources	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on cultural resources would occur.	Under the Proposed Action Alternative, historic concrete grenade practice structures (site 41BX827) would be demolished. However, the site has been recommended ineligible for the National Register of Historic Places (NRHP). There would be no visual effects on any historic structures since none are located within the Area of Potential Effect (APE). No adverse effects on cultural resources would occur.	During construction, if any archaeological evidence other than historic concrete grenade practice structures are unearthed, then JBSA-Camp Bullis archaeologists and Texas SHPO will be notified. In addition, any discovery of human remains will be treated in accordance with Native American Graves Protection and Repatriation Act (NAGPRA), and the standard operating procedures (SOP) set out in the Integrated Cultural Resources Management Plan (ICRMP).
Socioeconomics and Environmental Justice	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on socioeconomics or environmental justice would occur.	Under the Proposed Action Alternative, minor impacts would occur on socioeconomics or environmental justice and protection of children. Minor positive impacts could occur as a result of construction-related hiring and increased revenues for local businesses.	No mitigation measures would be required for socioeconomics or environmental justice under the Proposed Action Alternative.
Safety and Occupational Health	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on safety and occupational health would occur.	No adverse impacts on safety and occupational health would occur under the Proposed Action Alternative.	No mitigation measures would be required for safety and occupational health under the Proposed Action Alternative.
Transportation	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on transportation would occur.	Short-term minor impacts on traffic would occur during construction. However, no long-term impacts on transportation would occur under the Proposed Action Alternative.	No mitigation measures would be required for transportation under the Proposed Action Alternative.

Table 2-1, continued

Resource Area	No Action Alternative	Proposed Action Alternative	Environmental Design Measures
Utilities Infrastructure	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on utilities would occur.	Under the Proposed Action, increased demands on utilities and infrastructure would occur. However, in the near term the increased demands that would occur as a result of the Proposed Action Alternative are within the capacity of utilities available at JBSA-Camp Bullis, and therefore the impacts would be minor. In the future, additional development on JBSA-Camp Bullis could result in necessary expansion of water sources and stormwater system improvements.	A stormwater detention pond and compliance with Edwards Aquifer Protection Plan, as per JBSA-Fort Sam Houston and TCEQ requirements, will be needed because the project area is over 5 acres. In addition, Low Impact Development techniques following UFC 3-210-10 will be implemented to handle runoff at its source or point of origination and to mitigate impacts from stormwater runoff.
Hazardous Materials and Wastes	Under the No Action Alternative, no new construction or renovation would occur; therefore, no impacts on hazardous materials and wastes would occur.	Under the Proposed Action Alternative, short-term minor impacts from solid and hazardous waste and materials would occur.	During construction, the potential exists for accidental releases of petroleum, oil, and lubricant (POL) at the proposed construction site. However, the POL storage will include primary and secondary containment measures. Cleanup materials (e.g., oil mops) will also be maintained at the site to allow immediate action in case an accidental spill occurs. Drip pans will be provided for stationary equipment to capture any POL accidentally spilled during maintenance activities or leaks from the equipment. In addition, an SPCCP and an Installation Spill Contingency Plan (ISCP) are in place at JBSA-Camp Bullis and all personnel will be briefed on the implementation and responsibilities of these plans.

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SECTION 3.0
AFFECTED ENVIRONMENT AND CONSEQUENCES



3.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

Impacts (consequence or effect) can be either beneficial or adverse, and can be either directly related to the action or indirectly caused by the action. Direct impacts are those effects that are caused by the action and occur at the same time and place (40 CFR 1508.8[a]). Indirect impacts are those effects that are caused by the action and are later in time or further removed in distance, but that are still reasonably foreseeable (40 CFR 1508.8[b]). As discussed in this section, the alternatives may create temporary (lasting the duration of the project), short-term (up to 3 years), long-term (3 to 10 years following construction), or permanent effects.

Impacts can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. Major impacts are those effects that would result in substantial changes to the environment (40 CFR 1508.27) and should receive the greatest attention in the decision-making process. Minor impacts are those that would result in minimal changes to the environment. The following discussions describe and, where possible, quantify the potential effects of each alternative on the resources within or near the project corridor. All impacts described below are considered to be adverse unless stated otherwise.

Some topics are limited in scope due to the lack of direct effect from the proposed project on the resource, or because that particular resource is not located within the project area. Resources dismissed from further discussion are:

Wild and Scenic Rivers

The proposed construction of SF Apprentice Course facilities would not affect any designated Wild and Scenic Rivers (16 USC 551, 1278[c], 1281[d]), because no rivers designated as such are located within or near the project area.

Airspace

The proposed construction of SF Apprentice Course facilities would not affect any airspace designations.

3.1 LAND USE

3.1.1 Affected Environment

JBSA-Camp Bullis is a military training facility located predominantly in Bexar County, Texas, with a small portion of the northern border within Comal County. JBSA-Camp Bullis was established in the early 1900s as a remote rural outpost of nearby JBSA-Fort Sam Houston, which is located within San Antonio, Texas, and was utilized as a U.S. Army troop training facility and continues to function as a joint military training facility under the Joint Base San Antonio, for the U.S. Army, USAF, U.S. Marine Corps, and other Department of Defense (DoD) units. Specific areas of JBSA-Camp Bullis are also used as outdoor recreational areas by both active and retired DoD members and their families, civilian DoD staff, and other approved organizations (US Army 2006).

JBSA-Camp Bullis is located on the edge of the Edwards Plateau Land Resource Area in a hilly region known as the Texas Hill Country (City of San Antonio and DoD 2009). The installation primarily consists of undeveloped and open space used as training areas with a scattered built environment (cantonment area) devoted to academic training for military personnel. The JBSA-Camp Bullis cantonment area also provides an area for administrative facilities and support functions (U.S. Army 2007). Beyond the eastern, southern, and western boundaries of JBSA-Camp Bullis are primarily suburban residential developments resulting in two-thirds of JBSA-Camp Bullis being adjacent to the San Antonio city limits. Along the northern border of JBSA-Camp Bullis some original rangeland still exists, but the majority of the land is used for suburban subdivisions, although these developed areas are interspersed with undeveloped and remnant agricultural land. On the western border, abutting JBSA-Camp Bullis, lies Camp Stanley, and to the southwest, a 323-acre area called Eisenhower Park, once a part of JBSA-Camp Bullis, is a natural resource park owned by the City of San Antonio. Also found on the facility's southern border are several rock quarries, a cemetery, and commercial/industrial developments located off the adjacent major highways (U.S. Army 2006).

The proposed 17-acre SF Apprentice Course site, to be known as Camp Maisey, is located in the southwestern portion of JBSA-Camp Bullis in Bexar County. The 17-acre SF Apprentice Course site is located within the cantonment area in training area 8A. Land use in and adjacent to the proposed Camp Maisey is primarily undisturbed natural land bounded on the south by low-density, military-training developed areas. Land use near the existing dining facility (Building 5420), also known as Defender Inn, is characterized as a low-density, military-training developed area.

The rapid growth of the San Antonio municipal area in the last century has spurred suburban development around JBSA-Camp Bullis' boundaries. Encroachment of the local communities is expected to continue, which causes land use incompatibility pressures on JBSA-Camp Bullis. These pressures were studied in a 2009 DoD collaborative planning document entitled *Camp Bullis Joint Land Use Study*, which was prepared with input from the City of San Antonio, Bexar, Comal, and Kendall counties, as well as other local stakeholders and agencies (City of San Antonio and DoD 2009). Overall, the land use incompatibility noted in the Joint Land Use Study was associated with existing or proposed development plans located near JBSA-Camp Bullis. The land uses considered incompatible with military installations and their operations were based on many factors, but those noted as most common were the high levels of noise created by aircraft and firing ranges, heights of civilian structures near the installation, as well as off-installation light pollution that negatively impacts the use of night vision devices for military air and ground training (City of San Antonio and DoD 2009).

Land use controls in unincorporated areas are governed by the Texas Local Government Code, Title 7, Subtitle B. Typically, counties regulate the subdivision of land but do not have the power to control land use. The 2009 Joint Land Use Study identified this limited ability of the nearby counties to regulate land use as a concern (City of San Antonio and DoD 2009). Development controls also apply for areas overlying the Edwards Aquifer. The southern portion of JBSA-Camp Bullis lies within the aquifer recharge and contributing zones. The proposed Camp Maisey site does not lie within this recharge zone, but in the contributing zone. Local

regulations restrict density, types of land uses, and specific facilities that can occur, particularly in aquifer recharge areas.

On August 7, 2008, the San Antonio City Council approved a formal strategy that included seven key sustainment initiatives to address, support, and protect JBSA-Camp Bullis, entitled *City of San Antonio Camp Bullis Mission Sustainment Initiative*, and on June 18, 2009, the San Antonio City Council adopted the 2009 Joint Land Use Study (City of San Antonio and DoD 2009). Additionally, JBSA-Camp Bullis manages its natural resources through a collaborative effort between natural resource professionals and military personnel, and these groups strive to promote the long-term ecological sustainability of JBSA-Camp Bullis lands for multiple-use opportunities (U.S. Army 2007).

3.1.2 Environmental Consequences

3.1.2.1 Proposed Action Alternative

Under the Proposed Action Alternative the 17-acre SF Apprentice Course site (Camp Maisey) would be developed into additional training facilities, while still maintaining open areas surrounding these newly constructed facilities. Approximately 21 new PEBs (approximately 55,000 sf) would be constructed, and new utility installations (water, wastewater, and electric) would be required for the construction of all new buildings within the SF Apprentice Course site; however, tie-ins to these utilities are located nearby.

The 17-acre site's land use would change from undeveloped and open space areas currently used as training areas to a built environment characterized as low-density, scattered developed area used to facilitate academic training. Short-term land use disturbances would occur during the construction period; however, the overall land use would remain under governmental jurisdiction as a military training facility, and therefore, no long-term permanent impacts on land use and no land use incompatibilities with the nearby off-installation land uses would occur from the Proposed Action Alternative.

The renovation of Defender Inn would occur in a predominantly disturbed area, and no footprint expansion of the dining facility is anticipated. The proposed land use for the dining hall renovation is consistent with the present land use, and therefore, no land use impacts for this portion of the Proposed Action Alternative would occur.

3.1.2.2 No Action Alternative

Under the No Action Alternative, no new construction or renovation would occur, and the existing facilities would continue to be used. No land use impacts from the implementation of the No Action Alternative would occur.

3.2 AESTHETICS AND VISUAL RESOURCES

3.2.1 Affected Environment

Actions that cause the permanent loss of the characteristics that make an area visually unique or sensitive would be considered to be detrimental to the surrounding area. JBSA-Camp Bullis provides a landscape marked by a rustic setting with natural vegetation and geologic features typical of the Texas Hill Country. JBSA-Camp Bullis is predominantly undeveloped and the overall feel of the installation is of a park-like rural setting with a very small portion

(approximately two percent) of the installation developed. Most of the developed areas are within the cantonment area, and this built environment fits well into the natural setting with a mixture of new and old buildings and facilities. The buildings are predominantly earth tone in color and are set within a backdrop of older canopy trees and vegetation well-adapted to the terrain and climate (U.S. Army 2006). To prevent trespassing, the perimeter of JBSA-Camp Bullis is enclosed by a six-foot-high, chain-link fence topped with barbed wire (City of San Antonio and DoD 2009).

The landscape at JBSA-Camp Bullis and the surrounding areas was once characterized by lush grasslands, and an active restoration program exists to reduce the encroaching Ashe juniper (*Juniperus ashei*) and reestablish the native oak savanna/grassland. This effort aids in providing a more aesthetically pleasing, regionally appropriate vista, and in turn creates better site distances for training and hunting within the installation (U.S. Army 2007). To support the JBSA-Camp Bullis Integrated Natural Resources Management Plan (INRMP), the installation has an Air Education and Training Command (AETC) Forest and Tree Conservation Program of which the goal is to conserve and maintain trees to the maximum extent possible in support of its base mission requirements (U.S. Air Force 2011).

Visibility of the cantonment area is afforded by the Dominion neighborhood, which lies west-northwest of the cantonment area and has properties on the elevated hills that provide a downward view of JBSA-Camp Bullis. The Dominion neighborhood is a 43-acre, gated residential development with multimillion dollar residences and a private country club located about 0.5 mile west of JBSA-Camp Bullis (U.S. Army 2006).

3.2.2 Environmental Consequences

3.2.2.1 Proposed Action Alternative

Under the Proposed Action Alternative, a portion of the 17-acre site would change from an undeveloped and open space area currently used as a training area to a scattered low-density, built environment used to facilitate academic training. This siting would not disrupt the natural land areas of JBSA-Camp Bullis. The architecture of the newly constructed PEBs would follow the architectural compatibility guidelines specified in the Installation Design Guide and landscaping and signage would be chosen to match the installation standards. Additionally, the sizes and heights (single-story) of 20 of the 21 proposed PEBs would have overall building heights of less than 20 feet, while only the proposed warehouse building would have an overall height slightly over 20 feet (21 feet 8 inches). The relatively low heights of the PEBs would not interfere with the antenna that is located on the 17-acre site, so no line-of-sight issues associated with the antenna from implementation of the Proposed Action Alternative would be expected to occur. The proposed new buildings would blend in among the treed areas within the proposed SF Apprentice Course site. Every attempt would be made to retain viable native trees in and around the proposed PEBs (U.S. Air Force 2011). Additionally, the visibility of this portion of the cantonment area from the adjacent Dominion neighborhood would only be a minor alteration from the current visible viewshed of the JBSA-Camp Bullis cantonment.

Short-term visual impacts would occur during the construction period; however, upon cessation of construction and the subsequent landscaping of the new buildings, the long-term impacts on the aesthetics and visual resources from the Proposed Action Alternative would be minor.

The renovation of Defender Inn would occur in an existing low-density, developed area, and no footprint expansion of the dining facility is anticipated. Therefore, no major adverse short-term or long-term impacts for this portion of the Proposed Action Alternative would occur.

3.2.2.2 No Action Alternative

Under the No Action Alternative, no new construction or renovation would occur, and the existing cantonment area facilities would continue to be used. No aesthetics or visual impacts from the implementation of the No Action Alternative would occur.

3.3 AIR QUALITY

3.3.1 Affected Environment

The U.S. Environmental Protection Agency (USEPA) established National Ambient Air Quality Standards (NAAQS) for specific pollutants determined to be of concern with respect to the health and welfare of the general public. Ambient air quality standards are classified as either "primary" or "secondary." The major pollutants of concern, or criteria pollutants, are carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), particulate matter less than 10 microns (PM-10), particulate matter less than 2.5 microns (PM-2.5), and lead (Pb). NAAQS represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect the public health and welfare. The NAAQS are included in Table 3-1.

Areas that do not meet these NAAQS standards are called non-attainment areas; areas that meet both primary and secondary standards are known as attainment areas. The Federal Conformity Final Rule (40 CFR Parts 51 and 93) specifies criteria or requirements for conformity determinations for Federal projects. The Federal Conformity Rule was first promulgated in 1993 following the passage of Amendments to the Clean Air Act in 1990. The rule mandates that a conformity analysis must be performed when a Federal action generates air pollutants in a region that has been designated a non-attainment or maintenance area for one or more NAAQS.

A conformity analysis is the process used to determine whether a Federal action meets the requirements of the General Conformity Rule. It requires the responsible Federal agency to evaluate the nature of a proposed action and associated air pollutant emissions and calculate emissions as a result of the proposed action. If the emissions exceed established limits, known as *de minimis* thresholds, the proponent is required to implement appropriate mitigation measures. USEPA has designated Bexar County as in attainment for all NAAQS (USEPA 2010b).

Greenhouse Gases and Climate Change

Global climate change refers to a change in the average weather on the earth. Greenhouse gases (GHG) are gases that trap heat in the atmosphere. They include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), fluorinated gases including chlorofluorocarbons (CFC) and hydrochlorofluorocarbons (HFC), and halons, as well as ground-level O₃ (California Energy Commission 2007).

Table 3-1. National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Times
CO	9 ppm (10 mg/m ³)	8-hour ⁽¹⁾	None	
	35 ppm (40 mg/m ³)	1-hour ⁽¹⁾		
Pb	0.15 µg/m ³ ⁽²⁾	Rolling 3-Month Average	Same as Primary	
	1.5 µg/m ³	Quarterly Average	Same as Primary	
NO ₂	53 ppb ⁽³⁾	Annual (Arithmetic Average)	Same as Primary	
	100 ppb	1-hour ⁽⁴⁾	None	
PM-10	150 µg/m ³	24-hour ⁽⁵⁾	Same as Primary	
PM-2.5	15.0 µg/m ³	Annual ⁽⁶⁾ (Arithmetic Average)	Same as Primary	
	35 µg/m ³	24-hour ⁽⁷⁾	Same as Primary	
O ₃	0.075 ppm (2008 std)	8-hour ⁽⁸⁾	Same as Primary	
	0.08 ppm (1997 std)	8-hour ⁽⁹⁾	Same as Primary	
	0.12 ppm	1-hour ⁽¹⁰⁾	Same as Primary	
SO ₂	0.03 ppm	Annual (Arithmetic Average)	0.5 ppm	3-hour ⁽¹⁾
	0.14 ppm	24-hour ⁽¹⁾		
	75 ppb ⁽¹¹⁾	1-hour	None	

Source: USEPA 2010a at <http://www.epa.gov/air/criteria.html>

Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb - 1 part in 1,000,000,000) by volume, milligrams per cubic meter of air (mg/m³), and micrograms per cubic meter of air (µg/m³).

⁽¹⁾ Not to be exceeded more than once per year.

⁽²⁾ Final rule signed October 15, 2008.

⁽³⁾ The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

⁽⁴⁾ To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

⁽⁵⁾ Not to be exceeded more than once per year on average over 3 years.

⁽⁶⁾ To attain this standard, the 3-year average of the weighted annual mean PM-2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.

⁽⁷⁾ To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (effective December 17, 2006).

⁽⁸⁾ To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).

⁽⁹⁾ (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as USEPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

(c) USEPA is in the process of reconsidering these standards (set in March 2008).

⁽¹⁰⁾ (a) USEPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").

(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1.

⁽¹¹⁾ (a) Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

The major GHG-producing sectors include transportation, utilities (e.g., coal and gas power plants), industry/manufacturing, agriculture, and residential. End-use sector sources of GHG emissions include transportation (40.7 percent), electricity generation (22.2 percent), industry (20.5 percent), agriculture and forestry (8.3 percent), and other (8.3 percent) (California Energy Commission 2007). The main sources of increased concentrations of GHG due to human activity include the combustion of fossil fuels and deforestation (CO₂), livestock and rice farming, land use and wetland depletions, landfill emissions (CH₄), refrigeration system and fire suppression system use and manufacturing (CFC), and agricultural activities, including the use of fertilizers (California Energy Commission 2007).

Final Mandatory GHG Inventory Rule

In response to the Consolidation Appropriations Act (House Resolution 2764; Public Law [PL] 110–161), USEPA has issued the Final Mandatory Reporting of Greenhouse Gases Rule. The rule requires large sources that emit 25,000 metric tons (27,557 U.S. tons) or more per year of GHG emissions to report GHG emissions in the U.S., collect accurate and timely emissions data to inform future policy decisions, and submit annual GHG reports to the USEPA. The final rule was signed by the Administrator on September 22, 2009, published on October 30, 2009, and made effective December 29, 2009.

GHG Threshold of Significance

The CEQ drafted guidelines for determining meaningful GHG decision-making analysis. The CEQ guidance states that if the project would be reasonably anticipated to cause direct emissions of 25,000 metric tons (27,557 U.S. tons) or more of CO₂ GHG emissions on an annual basis, agencies should consider this a threshold for decision makers and the public. CEQ does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHG (CEQ 2010).

The GHG covered by Executive Order (EO) 13514 are CO₂, CH₄, N₂O, HFC, perfluorocarbons, and sulfur hexafluoride. These GHG have varying heat-trapping abilities and atmospheric lifetimes. CO₂ equivalency (CO₂e) is a measuring methodology used to compare the heat-trapping impact from various GHG relative to CO₂. Some gases have a greater global warming potential than others. Nitrogen oxides (NO_x), for instance, have a global warming potential that is 310 times greater than an equivalent amount of CO₂, and CH₄ is 21 times greater than an equivalent amount of CO₂.

3.3.2 Environmental Consequences

3.3.2.1 *Proposed Action Alternative*

Temporary and minor increases in air pollution would occur from the use of construction equipment (combustion emissions) and the disturbance of soils (fugitive dust) during construction of the training facilities and renovation of the dining facility. The following describes the air calculation methodologies utilized to estimate air emissions produced by the construction and renovation of the facilities.

Construction Air Emissions

Fugitive dust emissions were calculated using the emission factor of 0.19 ton per acre per month (Midwest Research Institute 1996), which is a more current standard than the 1985 PM-10 emission factor of 1.2 tons per acre-month presented in AP-42 Section 13 Miscellaneous Sources 13.2.3.3 (USEPA 2001). USEPA's NONROAD Model (USEPA 2005a) was used, as recommended by USEPA's *Procedures Document for National Emission Inventory, Criteria Air Pollutants, 1985-1999* (USEPA 2001), to calculate emissions from construction equipment. Combustion emission calculations were made for standard construction equipment, such as backhoes, bulldozer, dump truck, crane, and cement trucks. Assumptions were made regarding the total number of days each piece of equipment would be used, and the number of hours per day each type of equipment would be used.

Construction workers would temporarily increase the combustion emissions in the airshed during their commute to and from the project area. Emissions from delivery trucks would also contribute to the overall air emission budget. Emissions from delivery trucks and construction worker commuters traveling to the job site were calculated using the USEPA MOBILE6.2 Model (USEPA 2005b, 2005c and 2005d).

The total air quality emissions from the construction activities were calculated to compare to the *de minimis* thresholds of the General Conformity Rule. Summaries of the total emissions for construction activities are presented in Table 3-2. Details of the conformity analyses are presented in Appendix A.

Table 3-2. Total Air Emissions (tons/year) from Construction-Related Activities for the SF Apprentice Course versus the *de minimis* Threshold Levels

Pollutant	Total (tons/year)	<i>de minimis</i> Thresholds (tons/year) ¹
CO	11.50	100
Volatile Organic Compounds (VOC)	2.03	100
NO _x	12.17	100
PM-10	10.96	100
PM-2.5	2.04	100
SO ₂	1.37	100
CO ₂ and CO ₂ e	5,016	27,557

Source: 40 CFR 51.853 and Gulf South Research Corporation (GSRC) model projections (Appendix A).

⁽¹⁾ Note that Bexar County is in attainment for all NAAQS (USEPA 2010b).

Several sources of air pollutants would contribute to the overall air impacts of the construction project. The air results in Table 3-3 included emissions from:

1. Combustion engines of construction equipment
2. Construction workers commuting to and from work
3. Supply trucks delivering materials to the construction site
4. Fugitive dust from job site ground disturbances

**Table 3-3. Total Air Emissions (tons/year) from Student Commuter Activities
versus the *de minimis* Threshold Levels**

Pollutant	Total (tons/year)	<i>de minimis</i> Thresholds (tons/year) ¹
CO	40.69	100
VOC	4.30	100
NO _x	3.14	100
PM-10	0.02	100
PM-2.5	0.02	100
SO ₂	0.00	100
CO ₂ and CO ₂ e	2,359	27,557

Source: 40 CFR 51.853 and GSRC model projections (Appendix A).

⁽¹⁾ Note that Bexar County is in attainment for all NAAQS (USEPA 2010b).

Operational Air Emissions

Operational air emissions refer to air emissions that may occur after the new training facilities have been constructed. This would include the emissions associated with additional students training and residing at JBSA-Camp Bullis and their vehicles traveling to typical destinations such as the grocery store or restaurants. The calculations for air emissions from these daily automobile sources are presented in Appendix A and are summarized in Table 3-3.

As can be seen in Tables 3-2 and 3-3, air emissions from the Proposed Action Alternative would not exceed Federal *de minimis* thresholds. As there are no violations of air quality standards and no conflicts with the state implementation plans, the impacts on air quality in Bexar County and from the implementation of the Proposed Action Alternative would be minor. During the construction of the proposed training facilities, proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment. Dust suppression methods would be implemented to minimize fugitive dust, including wetting solutions applied to construction areas.

3.3.2.2 No Action Alternative

The No Action Alternative would not result in any direct impacts on air quality because no new construction or renovations would occur.

3.4 NOISE

3.4.1 Affected Environment

Noise is generally described as unwanted sound, which can be based either on objective impacts (i.e., hearing loss, damage to structures, etc.) or subjective judgments (e.g., community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 3 dB, and the threshold of discomfort or pain is around 120 dB. A-weighted decibel (dBA) is a measure of noise adjusted to conform to the frequency response of the human ear.

Noise levels occurring at night generally produce a greater annoyance than do the same levels occurring during the day. It is generally agreed that people perceive intrusive noise at night as

being 10 dBA louder than the same level of intrusive noise during the day, at least in terms of its potential for causing community annoyance. This perception is largely because background environmental sound levels at night in most areas are also about 10 dBA lower than those during the day.

Acceptable noise levels have been established by the U.S. Department of Housing and Urban Development (HUD) for construction activities in residential areas (HUD 1984):

Acceptable (not exceeding 65 dBA) – The noise exposure may be of some concern, but common building construction will make the indoor environment acceptable, and the outdoor environment will be reasonably pleasant for recreation and play.

Normally Unacceptable (above 65 but not greater than 75 dBA) – The noise exposure is more severe; barriers may be necessary between the site and prominent noise sources to make the outdoor environment acceptable; special building construction may be necessary to ensure that people indoors are sufficiently protected from outdoor noise.

Unacceptable (greater than 75 dBA) – The noise exposure at the site is so severe that the construction costs to make the indoor noise environment acceptable may be prohibitive, and the outdoor environment would still be unacceptable.

As a general rule, noise generated by a stationary noise source, or “point source,” will decrease by approximately 6 dBA over hard surfaces and 9 dBA over soft surfaces for each doubling of the distance. For example, if a noise source produces a noise level of 85 dBA at a reference distance of 50 feet over a hard surface, then the noise level would be 79 dBA at a distance of 100 feet from the noise source, 73 dBA at a distance of 200 feet, and so on. To estimate the attenuation of the noise over a given distance, the following relationship is utilized:

$$\text{Equation 1: } dBA_2 = dBA_1 - 20 \log^{(d_2/d_1)}$$

Where:

dBA_2 = dBA at distance 2 from source (predicted)

dBA_1 = dBA at distance 1 from source (measured)

d_2 = Distance to location 2 from the source

d_1 = Distance to location 1 from the source

Source: California Department of Transportation 1998

The project area is located on JBSA-Camp Bullis installation property and there are no civilian noise receptors nearby. Military buildings are located south and east of the project site, and the closest office buildings are located approximately 130 feet from the southeastern border of the project site.

The project area is located near small and large caliber weapons firing ranges and within the firing ranges’ noise zones. For impulsive sounds, the true instantaneous peak sound pressure level, which lasts for only a fraction of a second, is important in determining impacts. The peak noise metric (PK15[met]) is used for noise emissions from small and large weapons and accounts for meteorological variations. PK15(met) describes the peak sound level exceeded by 15 percent of firing events and represents the best available data for assessing the complaint risk of large

and small caliber weapons ranges. The proposed site is located just within the PK15(met) 87 dB noise contour for small caliber weapons and the PK15(met) 115 dB noise contour for large caliber weapons (City of San Antonio and DoD 2009). The noise level for these sources indicate a Noise Zone II, which has a low to moderate risk of complaints, and recommends that development should be limited to non-sensitive activities such as industry, manufacturing, transportation, and agriculture. However, if residential use is proposed, then it is recommended that a noise level reduction of 25-30 dB be incorporated in the design and construction of the facilities (U.S. Army 2006).

3.4.2 Environmental Consequences

3.4.2.1 *Proposed Action Alternative*

The proposed construction activities would require the use of common construction equipment. Table 3-4 presents noise emission levels for construction equipment expected to be used during the proposed construction activities. Anticipated sound levels at 50 feet range from 78 dBA to 84 dBA based on data from the Federal Highway Administration ([FHWA] 2007).

Table 3-4. A-Weighted (dBA) Sound Levels of Construction Equipment and Modeled Attenuation at Various Distances¹

Noise Source	50 feet	100 feet	200 feet	500 feet	1,000 feet
Backhoe	78	72	68	58	52
Crane	81	75	69	61	55
Bulldozer	84	78	72	64	58
Front-end loader	84	78	72	64	58
Concrete mixer truck	79	73	67	59	53

Source: FHWA 2007

¹ The dBA at 50 feet is a measured noise emission. The 100- to 1,000-foot results are GSRC modeled estimates.

Construction would involve the use of bulldozers, which have a noise emission level of 84 dBA at 50 feet from the source. Assuming the worst case scenario of 84 dBA for the Proposed Action Alternative, the noise model projected that noise levels of 84 dBA from a bulldozer would have to travel 433 feet before they would be attenuated to acceptable levels of 65 dBA.

Depending upon the number of construction hours, and the number, type, and distribution of construction equipment being used, the noise levels near the project area could temporarily exceed 65 dBA up to 433 feet from the project area. Geographic Information System (GIS) was used to determine the number of sensitive noise receptors within 1,500 feet of the edge of the project corridor, and no residential homes, parks, churches, medical facilities, schools, or other civilian sensitive noise receptors were located within 1,500 feet of the project site. The project site is located near military buildings, which are located approximately 120 to 400 feet from the south and southeastern border of the project site. Military personnel may experience noise emissions greater than 65 dBA during construction activities. Noise generated by the construction activities would be intermittent and last for approximately 9 months, after which noise levels would return to ambient levels. Therefore, the noise impacts from construction activities would be temporary and considered minor.

There is the potential for peak noise levels from the existing training and weapons ranges to disturb students in the dormitories and the potential for low to moderate risk of complaints from the students occupying the dormitories. The existing noise level from training activities and small and large caliber arms ranges must be considered in design of new facilities and a noise level reduction of 25-30 dB would be required for sleeping areas. In addition, any new construction should be designed to achieve an interior noise level of 45 dB for areas with noise sensitive uses, such as the dormitories. This could be achieved by using noise level reduction features such as sound absorptive materials and insulation, which would reduce the complaint potential, and therefore, the noise impacts from the firing ranges would be considered minor.

3.4.2.2 No Action Alternative

There would not be any construction or operational noise emissions associated with implementation of the No Action Alternative; therefore, there would not be any impacts on the noise environment.

3.5 WATER RESOURCES

3.5.1 Affected Environment

Surface Water

Surface water resources at JBSA-Camp Bullis include six small, intermittent creeks that are fed primarily by stormwater and exist as dry streambeds the remainder of the year (Figure 3-1), as well as numerous springs. Stormwater runoff at JBSA-Camp Bullis flows overland as sheet wash, collects in natural channels and streams, and drains into the San Antonio River. Salado, Panther Springs, and an unnamed creek flow in a southeasterly direction, draining the west-central and southeast areas of the installation. Muesebach and Cibolo creeks drain the northern and northeast areas of the base. Lewis Creek, a tributary to Salado Creek and the primary surface water drainage feature on JBSA-Camp Bullis, flows perennially from an unnamed spring for about 3,300 feet before disappearing underground. Lewis Creek is located approximately 0.5 mile north of the Proposed Action Alternative site, and flows southeast into Salado Creek. Runoff at the Proposed Action Alternative site flows south and east into Salado Creek. Other surface water features on JBSA-Camp Bullis include three large flood control structures, several man-made stockponds, wildlife waterers, wastewater holding ponds, and two semi-permanent ponds.

Groundwater

The oldest formations containing groundwater under JBSA-Camp Bullis are the Travis Peak Formation and Glen Rose Formation. Collectively, these formations make up the Trinity Group, which has been divided into three water-bearing units based on hydraulic conductivity. In addition, parts of JBSA-Camp Bullis are also located in the Edwards Aquifer recharge and contributing zones. The Glen Rose Formation receives recharge from direct precipitation and streams flowing across the outcrop. The Edwards Aquifer is recharged by stream flow from Salado and Cibolo creeks. The movement of groundwater in the Trinity Group and Edwards Aquifer is extremely variable due to the physical characteristics of the rock. The limestone and calcareously cemented sandstone depend on secondary porosity in the form of solution channels, fractures, and faults to transmit groundwater. Water transmission in these rock types can be erratic, resulting in unpredictable yields at different well locations (U.S. Army 2006).

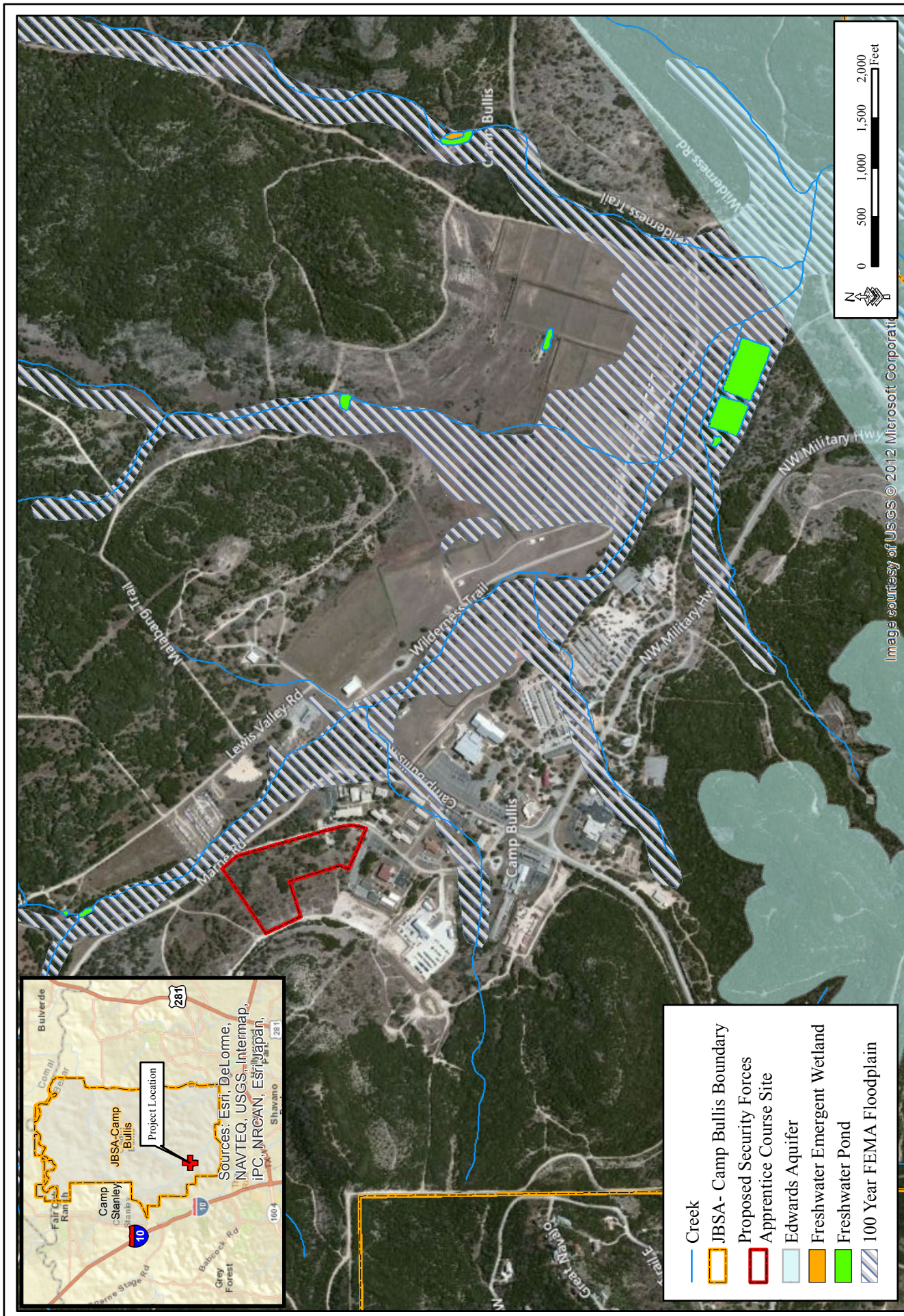


Figure 3-1: Water Features Within the JBSA-Camp Bullis Cantonment Area

JBSA-Camp Bullis obtains its water supply from wells installed in the Glen Rose Aquifer (U.S. Army 2006), which, in 1989, was listed as a critical water supply area by the State of Texas. Burgeoning growth in the area is putting considerable pressure on the aquifer's water resources (U.S. Army 2007). The widely published drying of the Lower Glen Rose wells in Blanco County during the summer of 1996 indicates that the aquifer's water quantity may be insufficient for the amount of growth occurring and anticipated to occur in the area.

Floodplains

The JBSA-Camp Bullis cantonment area is adjacent to the Salado Creek floodplain; however, the Proposed Action Alternative site lies west of and above the 100-year floodplain (see Figure 3-1). Three water retention dams were installed on JBSA-Camp Bullis to minimize the severity of downstream flooding and help provide adequate water storage (U.S. Army 2006).

Wetlands

Section 404 of the Clean Water Act (CWA) of 1977 (PL 95-217) authorizes the Secretary of the Army, acting through the U.S. Army Corps of Engineers (USACE), to issue permits for the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of the U.S. (Section 328.3[2] of the CWA) are those waters used in interstate or foreign commerce, subject to ebb and flow of tide, and all interstate waters including interstate wetlands. Waters of the U.S. are further defined and may include waters such as intrastate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, or impoundments of waters, tributaries of waters, and territorial seas. Jurisdictional boundaries for waters of the U.S. are defined in the field as the ordinary high water mark, which is that line on the shore established by the fluctuations of water and indicated by physical characteristics, such as clear, natural lines impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Environmental Laboratory 1987). Although no wetlands exist within the project area, the unvegetated waters of the U.S. would be subject to regulations under Section 404 of the CWA.

The U.S. Fish and Wildlife Service (USFWS) identified 88 acres of wetlands throughout the JBSA-Camp Bullis installation during a 1999 survey. However, no wetlands or waters of the U.S. are located within the Proposed Action Alternative site footprint (see Figure 3-1).

3.5.2 Environmental Consequences

3.5.2.1 *Proposed Action Alternative*

Surface Water

Under the Proposed Action Alternative, minor impacts would occur on surface waters. The Proposed Action would not divert or alter current streambeds or creeks or conduct any other activity that would damage any hydrologic characteristics. The 17-acre site is located within the Edwards Aquifer Contributing Zone, and therefore an Edwards Aquifer Contributing Zone Plan and an Edwards Aquifer Protection Plan will be prepared, as required by the Texas Commission

on Environmental Quality (TCEQ). Prior to construction, an NOI for coverage under the TCEQ Construction General National Pollutant Discharge Elimination System (NPDES) Permit TXR150000 will be submitted and a Stormwater Pollution Prevention Plan (SWPPP) will be developed and implemented. The SWPPP must include erosion and sediment controls, interim and permanent stabilization controls, and a description of any structural controls that would divert flows away from exposed soils. Silt fences, vegetation buffer strips, or equivalent sediment controls will be implemented on downslope boundaries. In addition, JBSA-Camp Bullis has a Pollution Prevention Plan (PPP) and a Spill Prevention, Control, and Countermeasures Plan (SPCCP) for preventing and handling accidental spills, which help avoid or minimize any potential major adverse impacts on surface water. Best Management Practices (BMP) will be implemented to prevent surface water runoff from causing soil erosion and siltation in streams and creeks. Low Impact Development standards and techniques for stormwater management following DoD United Facilities Criteria (UFC) 3-210-10 guidance will be utilized during construction. UFC 3-210-10 presents criteria for compliance with Section 438 of the Energy Independence and Security Act (EISA) of 2007, which is required for projects that involve construction of facilities with a footprint greater than 5,000 sf. The Low Impact Development techniques will be required to maintain predevelopment hydrology on the site and prevent any net increase in stormwater runoff.

Groundwater

JBSA-Camp Bullis receives all of its potable water from the Glen Rose Aquifer. Although there is some evidence that the Glen Rose and Edwards aquifers may be connected, the interrelationship between the two aquifers is unknown. The Glen Rose Aquifer currently does not implement any withdrawal limits; therefore, water availability and increased water usage due to the Proposed Action Alternative is not a concern. However, the development of areas in and around JBSA-Camp Bullis continues to increase demand for groundwater supplies.

The Proposed Action Alternative would have minor impacts on groundwater quality. JBSA-Camp Bullis does not use a large amount of water from the Glen Rose Aquifer (U.S. Army 2006). Activities with great potential for groundwater impacts (e.g., field kitchens, field laundries, field refueling, field bath units) are not allowed within the recharge zones. JBSA-Camp Bullis also protects against or mitigates negative effects on groundwater quality caused by installation activities through the implementation of focus management plans (e.g., SWPPP and PPP). In addition, the 17-acre site is located within the Edwards Aquifer Contributing Zone, and therefore an Edwards Aquifer Contributing Zone Plan and an Edwards Aquifer Protection Plan will be prepared, as required by the TCEQ.

With increased development and demands on local groundwater supplies, rainwater collection could be utilized by the new buildings. Gutters and water tanks are inexpensive, and the new buildings (55,000 sf) could collect approximately 33,000 gallons of pure solar distilled water with each inch of rainfall. The collected water could be used unfiltered for landscape use or filtered for high-quality potable water.

Floodplains

The Proposed Action Alternative site is not located within a floodplain. However, floodplains located downstream could be affected by the amount of impervious cover required for the project, but no significant impacts on floodplains would occur with the implementation of Low Impact Development techniques following UFC 3-210-10 and EISA Section 438.

Wetlands

No wetlands or waters of the U.S. are present within the Proposed Action Alternative site. However, wetlands located downstream could be affected by the amount of impervious cover required for the project, but no significant impacts on wetlands would occur with the implementation of Low Impact Development techniques following UFC 3-210-10 and EISA Section 438.

3.5.2.2 No Action Alternative

Under the No Action Alternative, no impacts on surface water, groundwater, floodplains, wetlands, or waters of the U.S. would occur.

3.6 EARTH RESOURCES

3.6.1 Affected Environment

JBSA-Camp Bullis is located on the edge of the Edwards Plateau in a region called the Texas Hill Country. The Balcones Escarpment (i.e., broad area of faulted limestone) forms the southern and eastern edge of the Edwards Plateau and crosses the southeastern corner of JBSA-Camp Bullis near the cantonment area and the Proposed Action Alternative site (Edwards Aquifer Authority 2012). The Balcones Escarpment extends from Del Rio, Texas, through Bexar County, and north of Austin, Texas (U.S. Army 2007). Elevation of the Edwards Plateau reaches approximately 2,000 feet (Eckhardt 2012).

Topography

Topography of JBSA-Camp Bullis consists of numerous hills and valleys that are drained by intermittent streams that flow east and south. Differences in erosion between the stratigraphic units of the Upper Glen Rose layers have resulted in the formation of a terrace-type topography (U.S. Army 2006). King Ridge (elevation 1,515 feet), Otis Ridge (elevation 1,480 feet), and High Hill (elevation 1,490 feet) are the most prominent landforms on JBSA-Camp Bullis (U.S. Geological Survey [USGS] 1992). Salado Creek and Lewis Creek are the major drainages that direct surface water runoff from the JBSA-Camp Bullis base (USGS 1992).

Geology

JBSA-Camp Bullis is underlain primarily by formations of the Trinity Group, including the lower and upper members of the Glen Rose Limestone (U.S. Army 2006). The Upper Glen Rose consists of beds of moderately resistant, massive chalky limestone alternating with beds of less resistant, marly limestone, and covers approximately 74 percent of JBSA-Camp Bullis. The Lower Glen Rose covers 14 percent at the northern edge of the training site (U.S. Army 2007). Overlying a small portion of the Glen Rose Limestone at the southern edge of JBSA-Camp Bullis is the Kainer Formation of the Edwards Group (Veni et al. 2006).

Karst features and caves are located throughout JBSA-Camp Bullis, but are predominantly found in the Lower Glen Rose and Kainer formations of the Edwards Group. Karst features refer to subterranean conduits formed by the slow removal of calcium carbonate from limestone bedrock by mildly acidic, percolating groundwater, which creates numerous solutional openings, cracks, fissures, and fractures (University of Texas-Austin 2012). As of 2012, 1,474 karst features, including 112 caves, 29 caves with endangered species, and 160 other karst features were identified on JBSA-Camp Bullis (JBSA-Camp Bullis 2012c). The nearest known karst feature to the Proposed Action Alternative site is approximately 0.25 mile (1,350 feet) away.

Soils

Soils occurring within the Proposed Action Alternative include Brackett gravelly clay loam with 12 to 20 percent slopes, and Eckrant cobbly clay with 1 to 5 percent slopes (Figure 3-2). Neither soil is considered prime or unique farmland. Eckrant cobbly clay is the dominant soil type within the project footprint, and is a well-drained, shallow soil formed in residuum derived from limestone (Natural Resources Conservation Service [NRCS] 2012). Brackett gravelly clay loam occurs on steeper slopes, is light colored, very shallow, and strongly calcareous, and developed over soft limestone interbedded with hard limestone. These are well-drained soils, but have high erosion potential even when there is a natural cover of vegetation (NRCS 1966).

3.6.2 Environmental Consequences

3.6.2.1 *Proposed Action Alternative*

The Proposed Action Alternative would have minor impacts on earth resources at JBSA-Camp Bullis. Approximately 17 acres of locally common soils would be permanently disturbed by the development of the project area. However, prior to construction, a SWPPP will be developed and implemented to control erosion and runoff. BMPs will be in place to mitigate short-term impacts (e.g., erosion, sedimentation). Additionally, site improvements due to the development of the 17-acre site (e.g., grading) would reduce the erosion potential of the area. The development of the new facilities and a parking lot would increase the amount of impermeable ground cover and affect stormwater absorption and drainage, but the use of BMPs and implementation of the Low Impact Development techniques (UFC 3-210-10) and the SWPPP would mitigate these impacts.

Under the Proposed Action Alternative, no adverse impacts on known karst features are expected to occur. The nearest known karst feature is located 0.25 mile (1,350 feet) away from the Proposed Action Alternative site. However, construction activities could expose unknown karst features. A qualified karst specialist shall inspect the site before and after clearing activities and prior to construction activities.

3.6.2.2 *No Action Alternative*

Under the No Action Alternative, no impacts on earth resources would occur. In addition, the No Action Alternative would not improve land surface or stabilize soil, allowing erosion to continue.



Figure 3-2: Soils in the Vicinity of the Security Forces Apprentice Course Site

3.7 BIOLOGICAL RESOURCES

3.7.1 Affected Environment

Vegetation

Bexar County is split between two Texas ecoregions: Blackland Prairies (Ecoregion 32a) and Edwards Plateau (Ecoregion 30). The Proposed Action Alternative site is situated in the northern part of Bexar County, and located within the Balcones Canyonlands ecoregion (Ecoregion 30c) of the Edwards Plateau (U.S. Army 2006). The Edwards Plateau was uplifted during the Miocene epoch, separating central Texas from the coastal plain; as a result, the Balcones Canyonlands are highly dissected through the erosion and solution of springs, streams, and rivers working above and below ground. This ecoregion supports many endemic plants and has a higher representation of deciduous woodlands than anywhere else within the Edwards Plateau (Griffith et al. 2004).

Common species include black cherry (*Prunus serotina*), Texas mountain laurel (*Sophora secundiflora*), madrone (*Arbutus menziesii*), Lacey oak (*Quercus glaucoides*), bigtooth maple (*Acer grandidentatum*), and Carolina basswood (*Tilia Americana* var. *caoliniana*). In some areas, remnant eastern swamp communities including species such as bald cypress (*Taxodium distichum*), American sycamore (*Platanus occidentalis*), and black willow (*Salix nigra*) occur in riparian habitats. Further west, the climate becomes more arid, and dry slopes are covered with open shrublands of juniper (*Juniperus communis*), sumac (*Rhus coriaria*), stool (*Dasyllirion wheeleri*), acacia (*Acacia* spp.), honey mesquite (*Prosopis glandulosa*), and ceniza (*Leucophyllum frutescens*) (Griffith et al. 2004). The existing 17-acre site is a disturbed grassland/oak savanna dominated by Texas live oak (*Quercus fusiformis*). The site is routinely used for training activities.

Wildlife

Wildlife studies have indicated that at least 57 mammal species, 206 bird species, and 92 species of reptiles and amphibians are found at JBSA-Camp Bullis (U.S. Army 2007, JBSA-Camp Bullis 2012d). There is very little permanent surface water on JBSA-Camp Bullis, and fish populations are limited. However, 14 species have been reported on the installation (U.S. Army 2007).

Common intermediate to larger mammals include coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), and white-tailed deer (*Odocoileus virginianus*). The more common smaller mammals present on the installation include fox squirrel (*Sciurus niger*), black-tailed jackrabbit (*Lepus californicus*), eastern cottontail (*Sylvilagus floridanus*), opossum (*Didelphis virginiana*), and armadillo (*Dasypus novemcinctus*). In addition, a variety of common rodents exist on the installation. The large availability of prey species located on JBSA-Camp Bullis provide food supply for predators such as bobcat (*Lynx rufus*), gray fox, coyote, and occasionally mountain lion (*Felis concolor*) (U.S. Army 2007).

The northern cardinal (*Cardinal cardinalis*) and black-crested titmouse (*Baeolophus atricristatus*) are the most abundant breeding birds on JBSA-Camp Bullis. A variety of common songbirds, raptors, waterfowl, and upland game birds also utilize the installation for foraging and nesting habitat (U.S. Army 2007).

The common frogs and toads that are known to occur on the installation include the cricket frog (*Acris crepitans*), red-spotted toad (*Bufo punctatus*), Gulf Coast toad (*Bufo valliceps*), southern leopard frog (*Rana utricularia*), and Couch's spadefoot toad (*Scaphiopus couchi*). The Texas horned lizard (*Phrynosoma cornutum*), six-lined racerunner (*Cnemidophorus sexlineatus*), yellow mud turtle (*Kinosternon flavescens*), red-eared slider (*Trachemys scripta elegans*), and Texas spiny lizard (*Sceloporus olivaceus*) are known to occur, or could occur, on JBSA-Camp Bullis. Snakes common to JBSA-Camp Bullis include the bullsnake (*Pituophis melanoleucus*), western coachwhip (*Masticophis flagellum testaceus*), checkered garter (*Thamnophis marcianus*), Texas coral snake (*Micrurus fulvius tenere*), and western diamondback (*Crotalus atrox*) (U.S. Army 2007).

Most of the wildlife utilizing the Proposed Action Alternative site are common, and have adapted to some environmental disturbance due to the close proximity of the JBSA-Camp Bullis cantonment area and adjacent developments. The 17-acre site is currently disturbed by training activities.

Threatened and Endangered Species

Federally Listed Species

The Endangered Species Act (ESA) of 1973 (16 USC § 1531 et seq., as amended) defines an endangered species as a species in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those that have been formally submitted to Congress for official listing as threatened or endangered. In addition, the USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which the USFWS has sufficient information to support proposals to list as endangered or threatened under the ESA. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.

The USFWS is the Federal agency responsible for implementing the ESA for terrestrial and aquatic species. The responsibilities of the USFWS under the ESA include: 1) identification of threatened and endangered species; 2) identification of critical habitats for listed species; 3) implementation of research on, and recovery efforts for, these species; and 4) consultation with other Federal agencies concerning measures to avoid harm to listed species.

Bexar County contains 18 Federally listed endangered species, 1 threatened species, and 1 proposed threatened species (Table 3-5).

Table 3-5. Federally Listed Species in Bexar County, Texas

Species	Federal Listing	Habitat	Potential to Occur at Site
Birds			
Black-capped vireo <i>Vireo atricapilla</i>	Endangered	Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grass spaces with foliage reaching to ground level for nesting cover. Presence of adequate broad-leaved shrubs, foliage to ground level and required structure more important than species composition.	Yes
Golden-cheeked warbler <i>Setophaga chrysoparia</i>	Endangered	Juniper-oak woodlands; dependent on Ashe juniper (cedar) for long fine bark strips from mature trees for nest construction; presence of broad-leaved trees and shrubs.	Yes
Mountain plover <i>Charadrius montanus</i>	Proposed Threatened	Nests in high plains, shortgrass prairie on ground in shallow depressions, forages in shortgrass plains and bare, dirt (plowed fields) during non-breeding season.	No
Whooping crane <i>Grus americana</i>	Endangered	Potential migrant via plains throughout most of the state.	Yes
Fish			
Fountain darter <i>Etheostoma fonticola</i>	Endangered	Quiet, flowing parts of clean, spring-fed waters with bottom vegetation.	No
Amphibians			
San Marcos salamander <i>Eurycea nana</i>	Threatened	Clear, flowing springwater coming from the headwaters of the San Marcos River.	No
Texas blind salamander <i>Typhlomolge rathbuni</i>	Endangered	Water-filled caves of the Edwards Aquifer near San Marcos, Texas.	No
Invertebrates			
Ground beetle <i>Rhadine infernalis</i>	Endangered, Critical Habitat	Karst features in north and northwest Bexar County. Spends entire life underground in caves and mesocaverns.	No
Ground beetle <i>Rhadine exilis</i>	Endangered, Critical Habitat	Karst features in north and northwest Bexar County. Spend entire life underground in caves and mesocaverns.	No
Braken Bat Cave meshweaver <i>Cicurina venii</i>	Endangered, Critical Habitat	Karst features in north and northwest Bexar County. Spends entire life underground in caves and mesocaverns.	No
Cokendolpher Cave Harvestman <i>Texella cokendolpheri</i>	Endangered, Critical Habitat	Karst features in north and northwest Bexar County. Spends entire life underground in caves and mesocaverns.	No
Comal Springs dryopid beetle <i>Stygoparnus comalensis</i>	Endangered, Critical Habitat	Comal Springs from the headwaters of the Comal River.	No
Comal Springs riffle beetle <i>Heterelmis comalensis</i>	Endangered, Critical Habitat	Inhabits gravel substrates and shallow riffles in spring runs and found in headwater springs on hard-packed gravel substrate.	No
Government Canyon bat cave spider <i>Neoleptoneta microps</i>	Endangered	Karst features in north and northwest Bexar County. Spends entire life underground in caves and mesocaverns.	No

Table 3-5, continued

Species	Federal Listing	Habitat	Potential to Occur at Site
Government Canyon Bat Cave meshweaver <i>Cicurina vespera</i>	Endangered	Karst features in north and northwest Bexar County. Spends entire life underground in caves and mesocaverns.	No
Helotes mold beetle <i>Battisodes ventyivi</i>	Endangered, Critical Habitat	Karst features in north and northwest Bexar County. Spends entire life underground in caves and mesocaverns.	No
Madla's Cave meshweaver <i>Cicurina madla</i>	Endangered, Critical Habitat	Karst features in north and northwest Bexar County. Spends entire life underground in caves and mesocaverns.	No
Peck's Cave amphipod <i>Stgobromus pecki</i>	Endangered	Inhabits subterranean springs in Comal Springs and Hueco Springs, Comal County, Texas.	No
Robber Baron Cave meshweaver <i>Cicurina baronia</i>	Endangered, Critical Habitat	Karst features in north and northwest Bexar County. Spends entire life underground in caves and mesocaverns.	No
Plants			
Texas wild-rice <i>Zizania texana</i>	Endangered	Known from one area in Texas in the headwaters of the San Marcos River. Requires clear, flowing waters, shallow (<2 meters) of spring origin with relatively constant year-round temperature of 21-25 degrees Celsius.	No

Source: USFWS 2012a, Texas Parks and Wildlife Department (TPWD) 2012

For the identification of areas that may contain endangered karst invertebrates, Veni (2002) delineated five karst zones in the San Antonio area. The project area is located within karst zone 3, defined as an area that probably does not contain endangered karst invertebrates (USFWS 2008). The closest other karst zone to the project area is karst zone 2, which is approximately 900 feet from the project area boundary. This distance makes it unlikely that a cave or mesocavern connecting to karst zone 2 extends underground and reaches the subsurface below the project area. For construction projects that may disturb caves or karst features located in karst zone 3, USFWS recommends that, at a minimum, the landowner or a designated representative visually inspect the property and adjacent area for karst features. If no karst features are discovered, then no further action is necessary; however, if a karst feature is present, then a qualified individual should follow the instructions provided by USFWS (2006) for determining the presence or absence of endangered karst species. This can involve excavation of the karst feature followed by a series of faunal surveys, which require a 10(a)(1)(A) permit from USFWS.

The Migratory Bird Treaty Act (MBTA) requires that Federal agencies coordinate with the USFWS if a construction activity would result in any harm to a migratory bird, including breeding and nesting activities. The black-capped vireo and golden-cheeked warbler are neotropical migrants that arrive at JBSC-Camp Bullis during March and April to begin nesting. The whooping crane migrates through JBSC-Camp Bullis in mid-fall and again in mid-spring during normal migration and is periodically seen on JBSC-Camp Bullis (U.S. Army 2007). The mountain plover has not been reported on the installation (U.S. Army 2007).

The preferred habitat of the golden-cheeked warbler is mature Ashe juniper/mixed hardwood communities that provide the necessary shredding bark that is required for nest construction and produce insects for the birds to feed upon (USFWS 2012c). Preferred golden-cheek warbler habitat occurs on approximately 6,810 acres on JBSA-Camp Bullis and is distributed throughout the installation (U.S. Army 2007). The golden-cheeked warbler nests exclusively in 33 counties in central Texas (USFWS 2012c) and requires Ashe juniper bark for nesting material. Habitat loss and fragmentation through development, agriculture, poor grazing management, and impounds are the greatest threat to the golden-cheeked warbler. In addition, although Ashe juniper has spread into many areas, it often forms dense homogenous stands that lack the hardwood component of preferred golden-cheeked warbler habitat. This species may also be susceptible to brown-headed cowbird (*Molothrus ater*) parasitism. Surveys have been conducted for golden-cheeked warbler on JBSA-Camp Bullis since 1991, and individuals have been detected in every training area on the installation (U.S. Army 2007). The black-capped vireo breeding range extends from southern Oklahoma, through central Texas, to the western coast of Mexico. The preferred habitat of the black-capped vireo is rangelands with scattered clumps of shrubs separated by open grasslands (TPWD 2012). The main threats to the black-capped vireo are the clearing of low-growing woody cover for agriculture, development, or over-grazing by livestock. Surveys for the black-capped vireo on JBSA-Camp Bullis conducted from 1989 through 2006 indicated a stable population of the species on the installation, and confirmed black-capped vireo territories on JBSA-Camp Bullis cover an estimated 212 acres of shrub habitats, concentrated in TA-9 (U.S. Army 2007).

The golden-cheeked warbler and black-capped vireo are managed and studied under the terms of the 28 July 2005 Biological Opinion from the USFWS (U.S. Army 2005b), and include measures necessary to minimize incidental “take” of the golden-cheeked warbler and black-capped vireo. These measures include:

- Minimize harassment and harm of golden-cheeked warbler or black-capped vireo during activities associated with implementing projects and, to the greatest extent possible:
 - Conduct authorized activities during non-nesting periods (August 15 and February 28).
 - Minimize authorized activities within core habitat and adjacent riparian areas or within known nesting territories during nesting and post-fledgling season (March 1 through August 14).
 - Allow golden-cheeked warbler and black-capped vireo individuals encountered during authorized activities to move away from activities on their own.
 - Restrict movement of heavy equipment between a project site and establish roadways to minimize habitat disturbance.
 - Conduct surveys annually to facilitate routine operation planning efforts.
- Minimize effects of temporary losses and degradation of habitat of golden-cheeked warbler and black-capped vireo and, to the greatest extent practicable, restore habitat to pre-project conditions by:

- Designating known occupied habitat for Federally listed species as Environmentally Sensitive Areas, and personnel shall, to the greatest extent possible, avoid such areas;
- Removing temporary fill, construction material, and other debris from disturbed areas to restore disturbed areas to pre-project conditions after the completion of activities; and
- Ensuring compliance with reporting requirements to assist in management decisions that will avoid and minimize effects on golden-cheeked warbler, black-capped vireo, and their associated habitats.

Critical Habitat

The ESA also calls for the conservation of critical habitat, which consists of the areas of land, water, and air space that an endangered species needs for survival. Critical habitat also includes such things as food and water, breeding sites, cover or shelter, and sufficient habitat area to provide for normal population growth and behavior. One of the primary threats to many species is the destruction or modification of essential habitat by uncontrolled land and water development.

Critical habitat exists in Bexar County for nine Federally endangered species: *Rhadine exilis* (ground beetle, no common name), *Rhadine infernalis* (ground beetle, no common name), Helotes mold beetle, Cokendolpher Cave harvestman, Robber Baron Cave meshweaver, Madla Cave meshweaver, Braken Cave meshweaver, Government Canyon Bat Cave meshweaver, and Government Bat Cave spider. Six karst fauna regions (KFR) have been delineated within Bexar County and represent geological or geographical features that may prevent the movement of small cave-dwelling animals, and have resulted in present-day distribution of karst invertebrates in Bexar County.

In April 2003, 1,063 acres in 22 units were designated as KFRs (50 CFR 17). However, USFWS announced on February 14, 2012, a final Critical habitat designation for nine invertebrates within Bexar County under the ESA (effective March 15, 2012), and in total, the USFWS will designate 4,216 acres in thirty units (USFWS 2012b). No critical habitat exists on JBSA-Camp Bullis for these invertebrate species. Critical Habitat for *Rhadine exilis*, *Rhadine infernalis*, and Madla cave meshweaver occurs within five miles of the Proposed Action Alternative site.

In addition, the Proposed Action Alternative is located near an area of core habitat for the Federally endangered golden-cheeked warbler. However, the site is not located within core habitat or within the 100-meter buffer area surrounding the core habitat. Core habitat is defined as habitat that has been occupied during the past three consecutive years and is delineated by placing a 10-acre circle around each bird location (U.S. Army 2005a).

State-listed Species

TPWD lists additional species as threatened or endangered within Bexar County (Table 3-6). Species listed as a species of Federal concern are not listed in Table 3-6.

Table 3-6. State-Listed Species in Bexar County, Texas

Species	State Listing	Habitat	Potential to Occur at Site
Birds			
American peregrine falcon <i>Falco peregrines anatum</i>	Threatened	Occupies a wide variety of habitats during migration; migrant across state.	Yes
Arctic peregrine falcon <i>Falco peregrines tundrius</i>	Threatened	Occupies a wide variety of habitats during migration; migrant across state.	Yes
Interior least tern <i>Sterna antillarum athalassos</i>	Endangered	Nests along sand and gravel bars within braided streams and rivers.	No
Sprague's pipit <i>Anthus spragueii</i>	Special Concern	Only in Texas during migration and winter; diurnal migrant tied to native upland prairie and coastal grasslands.	No
Western burrowing owl <i>Athene cunicularia hypugaea</i>	Special Concern	Open grasslands (prairie, plains, savanna) or open areas such as vacant lots near human habitation.	No
White-faced ibis <i>Plegadis chihi</i>	Threatened	Freshwater marshes, sloughs, irrigated rice fields.	No
Wood stork <i>Mycteria Americana</i>	Threatened	Prairie ponds, flooded fields, ditches, other shallow standing water.	No
Zone-tailed hawk <i>Buteo albonotatus</i>	Threatened	Open deciduous or pine-oak woodland near watercourses; wooded canyons and tree-lined rivers.	No
Invertebrates			
Cave obligate crustacean <i>Monodella texana</i>	Special Concern	Subaquatic, subterranean obligate, underground freshwater aquifers.	No
Amphibians			
Cascade Caverns salamander <i>Eurycea latitans complex</i>	Threatened	Subaquatic, springs and caves in Medina River, Guadalupe River, and Cibolo Creek watersheds.	No
Comal blind salamander <i>Eurycea tridentifera</i>	Threatened	Semi-troglobitic, found in springs and waters of caves.	No
Texas Salamander <i>Eurycea rathbuni</i>	Special Concern	Springs, seeps, cave streams, and creek headwaters, under rocks and leaves; restricted to Helotes and Leon Creek drainages.	No
Fish			
Guadalupe bass <i>Micropterus treculii</i>	Special Concern	Endemic to Perennial Streams of the Edward's Plateau region; introduced in Nueces River system.	No
Toothless blindcat <i>Trogloglanis pattersoni</i>	Threatened	Troglobitic, blind catfish endemic to the San Antonio Pool of the Edward's aquifer.	No
Widemouth blindcat <i>Satan eurystomus</i>	Threatened	Troglobitic, blind catfish endemic to the San Antonio Pool of the Edward's aquifer.	No
Invertebrates			
Manfreda giant-skipper <i>Stallingsia maculosus</i>	Special Concern	Skipper larvae usually feed inside a leaf shelter and pupate in a cocoon made of leaves fastened together with silk.	Yes
Rawson's metalmark <i>Calephelis rawsoni</i>	Special Concern	Moist areas in shaded limestone outcrops in central Texas, desert scrub or oak woodland in foothills, or along rivers elsewhere.	Yes

Table 3-6, continued

Species	State Listing	Habitat	Potential to Occur at Site
Mammals			
Black bear <i>Ursus americanus</i>	Threatened	Bottomland hardwoods and large tracts of inaccessible forested areas; due to field characteristics similar to Louisiana Black Bear, all east Texas black bears are treated as Federal- and state- listed threatened.	No
Cave myotis bat <i>Myotis velifer</i>	Special Concern	Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (<i>Hirundo pyrrhonota</i>) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore.	Yes
Ghost-faced bat <i>Mormoops megalophylla</i>	Special Concern	Colonially roosts in caves, crevices, abandoned mines, and buildings; insectivorous; breeds late winter-early spring; single offspring born per year.	No
Gray wolf <i>Canis lupus</i>	Endangered	Extirpated; formerly known throughout the western two-thirds of the state in forests, brushlands, or grasslands.	No
Plains spotted skunk <i>Spilogale putorius interrupta</i>	Special Concern	Catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie.	No
Red wolf <i>Canis rufus</i>	Endangered	Extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies.	No
Mollusks			
Creeper (squawfoot) <i>Strophitus undulatus</i>	Special Concern	Small to large streams, prefers gravel or gravel and mud in flowing water; Colorado, Guadalupe, San Antonio, Neches (historic), and Trinity (historic) river basins.	No
False spike mussel <i>Quadrula mitchelli</i>	Threatened	Possibly extirpated in Texas; probably medium to large rivers; substrates varying from mud through mixtures of sand, gravel and cobble; one study indicated water lilies were present at the site; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins.	No
Golden orb <i>Quadrula aurea</i>	Threatened	Sand and gravel in some locations and mud at others; found in lentic and lotic; Guadalupe, San Antonio, Lower San Marcos, and Nueces River basins.	No
Mimic cavesnail <i>Phreatodrobia imitata</i>	Special Concern	Subaquatic; only known from two wells penetrating the Edwards Aquifer.	No
Texas fatmucket <i>Lampsilis bracteata</i>	Threatened	Streams and rivers on sand, mud, and gravel substrates; intolerant of impoundment; broken bedrock and coarse gravel or sand in moderately flowing water; Colorado and Guadalupe river basins.	No

Table 3-6, continued

Species	State Listing	Habitat	Potential to Occur at Site
Texas pimpleback <i>Quadrula petrina</i>	Threatened	Mud, gravel and sand substrates, generally in areas with slow flow rates; Colorado and Guadalupe river basins.	No
Reptiles			
Spot-tailed earless lizard <i>Holbrookia lacerata</i>	Special Concern	Central and southern Texas and adjacent Mexico; moderately open prairie-brushland; fairly flat areas free of vegetation or other obstructions, including disturbed areas; eats small invertebrates; eggs laid underground.	Yes
Texas garter snake <i>Thamnophis sirtalis annectens</i>	Special Concern	Wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August.	No
Texas horned lizard <i>Phrynosoma cornutum</i>	Threatened	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September.	Yes
Texas indigo snake <i>Drymarchon melanurus erebennus</i>	Threatened	Texas south of the Guadalupe River and Balcones Escarpment; thornbush-chaparral woodlands of south Texas, in particular dense riparian corridors; can do well in suburban and irrigated croplands if not molested or indirectly poisoned; requires moist microhabitats, such as rodent burrows, for shelter.	No
Texas tortoise <i>Gopherus berlandieri</i>	Threatened	Open brush with a grass understory is preferred; open grass and bare ground are avoided; when inactive occupies shallow depressions at base of bush or cactus, sometimes in underground burrows or under objects; longevity greater than 50 years; active March-November; breeds April-November.	Yes
Timber/Canebrake rattlesnake <i>Crotalus horridus</i>	Threatened	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto.	No
Plants			
Big red sage <i>Salvia pentstemonoides</i>	Special Concern	Texas endemic; moist to seasonally wet, steep limestone outcrops on seeps within canyons or along creek banks; occasionally on clayey to silty soils of creek banks and terraces, in partial shade to full sun; basal leaves conspicuous for much of the year; flowering June-October.	No

Table 3-6, continued

Species	State Listing	Habitat	Potential to Occur at Site
Bracted twistflower <i>Streptanthus bracteatus</i>	Special Concern	Texas endemic; shallow, well-drained gravelly clays and clay loams over limestone in oak juniper woodlands and associated openings, on steep to moderate slopes and in canyon bottoms; several known soils include Tarrant, Brackett, or Speck over Edwards, Glen Rose, and Walnut geologic formations; populations fluctuate widely from year to year, depending on winter rainfall; flowering mid-April to late May, fruit matures and foliage withers by early summer.	No
Correll's false dragon-head <i>Physostegia correllii</i>	Special Concern	Wet, silty clay loams on streamsides, in creek beds, irrigation channels and roadside drainage ditches; or seepy, mucky, sometimes gravelly soils along riverbanks or small islands in the Rio Grande; or underlain by Austin Chalk limestone along gently flowing spring-fed creek in central Texas; flowering May-September.	No
Elmendorf's onion <i>Allium elmendorfi</i>	Special Concern	Texas endemic; grassland openings in oak woodlands on deep, loose, well-drained sands; in Coastal Bend, on Pleistocene barrier island ridges and Holocene Sand Sheet that support live oak woodlands; to the north it occurs in post oak-black hickory-live oak woodlands over Queen City and similar Eocene formations; one anomalous specimen found on Llano Uplift in wet pockets of granitic loam; flowering March-April, May.	No
Hill Country wild-mercury <i>Argythamnia aphoroides</i>	Special Concern	Texas endemic; mostly in bluestem-grama grasslands associated with plateau live oak woodlands on shallow to moderately deep clays and clay loams over limestone on rolling uplands, also in partial shade of oak-juniper woodlands in gravelly soils on rocky limestone slopes; flowering April-May with fruit persisting until midsummer.	No
Parks' jointweed <i>Polygonella parksii</i>	Special Concern	Texas endemic; mostly found on deep, loose, whitish sand blowouts (unstable, deep, xeric, sandhill barrens) in Post Oak Savanna landscapes over the Carrizo and Sparta formations; also occurs in early successional grasslands, along right-of-ways, and on mechanically disturbed areas; flowering June-late October or September-November.	No
Sandhill woollywhite <i>Hymenopappus carrizoanus</i>	Special Concern	Texas endemic; disturbed or open areas in grasslands and post oak woodlands on deep sands derived from the Carrizo Sand and similar Eocene formations; flowering April-June.	No

Source: TPWD 2011

There are several state-listed species with the potential to occur on-site. The American peregrine falcon is state-listed threatened and is occasionally seen on JBSA-Camp Bullis during migration. The TPWD also lists the Arctic peregrine falcon as state threatened because it resembles the endangered American peregrine falcon. The remaining sensitive bird species that occur or could occur on JBSA-Camp Bullis have not been reported on the installation (U.S. Army 2007). JBSA-Camp Bullis is along the northern boundary of the Texas indigo snake's range and on the western boundaries of the Texas garter snake and canebrake rattlesnake, indicating that there is a low probability of these species occurring on the installation. However, the Texas horned lizard is widespread in Texas and the Texas tortoise has been occasionally sighted on JBSA-Camp Bullis (U.S. Army 2007). The cave myotis bat has been recorded during biological surveys on JBSA-Camp Bullis (U.S. Army 2007) and could potentially utilize the project area as foraging habitat. The bracted twistflower has been observed on the installation on the southeastern boundary, but none have been observed within the project area (U.S. Army 2007).

3.7.2 Environmental Consequences

3.7.2.1 *Proposed Action Alternative*

Vegetation

Minor impacts on vegetation would occur as a result of the Proposed Action Alternative. Approximately 17 acres of previously disturbed grassland/oak savanna would be permanently disturbed. However, the vegetation is locally common, and the proposed project would only remove a small percentage of similar habitats available on the installation. Every attempt would be made to retain viable native trees in and around the proposed PEBs. Designs would account for existing groups of live oaks, and infrastructure would be designed and constructed in a way that preserves an undeveloped buffer of twice the drip line distance from the existing tree trunks. Under the AETC Forest and Tree Conservation Program, plants located in commercial forests, woodlands, or urban forests that are damaged during construction or related activity shall be replaced between November 1 and April 1 with a one-year warranty at no expense to the government. Trees located on or near the construction site will be considered for saving or replacement, and priority is given to trees in good condition that appear on the INRMP list of recommended trees and shrubs. Smaller plants (e.g., shrubs, hedges, or trees up to 5-inch diameter at breast height [dbh]) shall be replaced with plants of equal or greater size, type, and value (including historic value). Larger trees (i.e., greater than 6-inch dbh) damaged during construction that cannot be relocated without a high probability of survival shall be recompensed by number of smaller trees within an aggregated area of noon shade equal to the noon shade area of the larger tree (U.S. Air Force 2011).

Wildlife

The Proposed Action Alternative site is located near and partially within the main cantonment of JBSA-Camp Bullis, which is developed and contains infrastructure for facilities. Wildlife utilizing the area around the main cantonment are likely common species and adapted to a disturbed environment. Existing wildlife would be anticipated to relocate to adjacent areas within the installation, where similar habitat exists. As a result, minor impacts on wildlife would occur with the implementation of the Proposed Action Alternative.

Threatened and Endangered Species

The golden-cheeked warbler and black-capped vireo are managed and studied under the terms of the 28 July 2005 Biological Opinion from the USFWS (U.S. Army 2005b), and include measures necessary to minimize incidental “take” of the golden-cheeked warbler and black-capped vireo during construction, as described previously. The project area is located near core habitat for the golden-cheeked warbler, but is not within core habitat or the 100-meter buffer surrounding the core habitat. JBSA-Camp Bullis currently has training restrictions (e.g., 100-meter noise buffer zone around core habitat during breeding season) in place to limit exposure of protected species during sensitive periods. Noise levels could increase during construction, but research has indicated limited noise-related effects on the golden-cheeked warbler and black-capped vireo outside of sensitive activity periods (i.e., nesting and breeding seasons) (U.S. Army 2006). The projected noise levels associated with construction and operational activities at the core habitat is anticipated to be below the hearing threshold of the golden-cheeked warbler, so the training and construction noise is not expected to interfere with the birds’ courtship process, territorial establishment, or reproductive success. However, noise could affect human hearing ability to detect golden-cheeked warblers during the survey season.

Three of the Federally endangered karst invertebrates are known to occur on JBSA-Camp Bullis, and the remaining five species have potential to occur on JBSA-Camp Bullis. However, no known karst features are located within or adjacent to the 17-acre project site, and the project is located within karst zone 3, defined as an area that probably does not contain endangered karst invertebrate species (USFWS 2008). The project site is located over 900 feet from the nearest karst zone, karst zone 2, that is known to contain or has a high probability of containing endangered karst invertebrate species (USFWS 2008). Therefore, no effects are anticipated on listed karst species. However, there is potential to uncover karst features during construction and a qualified karst specialist shall inspect the site for karst features before and after clearing activities and prior to construction activities.

Several listed species could potentially use the project area as habitat; however, the site is located close to existing development and the species have not been detected in previous surveys. As a result, the likelihood of sensitive species utilizing the area is low. Pre-construction surveys would be performed on the project area to confirm the absence of sensitive species. Therefore, there would be no effect on threatened or endangered species as a result of the Proposed Action Alternative.

3.7.2.2 No Action Alternative

Under the No Action Alternative, no impacts on vegetation, wildlife, or threatened or endangered species would occur because no facilities would be constructed or renovated.

3.8 CULTURAL RESOURCES

Cultural resources are prehistoric and historic sites, features, districts, structures, artifacts, monuments, and any other physical evidence of past activities and accomplishments of humans. Cultural resources are important because of their association or linkage to past events, historically important persons, design and construction values, and for their ability to yield important information about history. These cultural resources are limited non-renewable resources that, once destroyed, cannot be returned to their original state and, unless managed

properly, can lose their scientific, historic, and cultural significance. Cultural resources are regulated at JBSA-Camp Bullis per the National Historic Preservation Act (NHPA) of 1966, the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, the Archaeological Resources Protection Act of 1979, Antiquities Act of 1906, and other statutes. JBSA-Camp Bullis manages cultural resources associated with all prehistoric and historic periods recognized in south-central Texas. The *Integrated Cultural Resources Management Plan: Camp Bullis Training Site* (ICRMP; USACE 2001) contains detailed information about the history of JBSA-Camp Bullis and the cultural resources management practices implemented for the installation in compliance with all Federal laws, regulations, and standards and is hereby incorporated by reference.

3.8.1 Affected Environment

The project area of the SF Apprentice Course has been evaluated for impacts on historic and archaeological properties in previous surveys by Prewitt and Associates, Inc. in 1989 and 2001 (Boyd et al. 1990, Cestaro et al. 2001). The Prewitt and Associates, Inc. cultural resources investigations incorporating the project area comply with both the NHPA (16 USC 470, et. seq.) and the Programmatic Agreement (PA) entered into by JBSA-Camp Bullis, the Texas State Historic Preservation Officer (SHPO), the Department of the Army, and the Advisory Council on Historic Preservation (ACHP) for the Management of Historic Properties on JBSA-Camp Bullis.

The 1990 archaeological survey of the 17-acre project area identified one new archaeological site, 41BX827, located in the project area. Site 41BX827 consists of historic military (World War I to World War II-era) concrete grenade practice structures that are recommended ineligible for inclusion in the National Register of Historic Places (NRHP) and require no further cultural resource investigations (Boyd et al. 1990, USACE 2001). The historic World War I to World War II-era site requiring demolition is approximately 9,500 square feet.

The project area is situated on the northern end of the cantonment where modern, non-historic buildings are located. These buildings are predominantly earth tone in color and are set within a backdrop of older canopy trees and vegetation.

3.8.2 Environmental Consequences

3.8.2.1 Proposed Action Alternative

The Proposed Action Alternative would result in ground-disturbing activities on the 17-acre site and demolition of site 41BX827. Site 41BX827 is recommended ineligible for NRHP, and its disturbance during construction would result in no adverse effects on cultural resources. The Area of Potential Effect (APE) for visual impact on historic structures is the line of sight maximum distance from where the project area can be viewed. The APE is up to approximately 1,000 feet from the project site until the view is obstructed by modern age buildings or vegetation. The architecture of the newly constructed PEBs would follow the architectural compatibility guidelines specified in the Installation Design Guide and landscaping and signage would be chosen to match the installation standards. The proposed new buildings would have overall building heights of less than 20 feet, match the existing building color scheme, and blend in among the treed areas within the proposed SF Apprentice Course site. There would be no visual effects on any historic structures since none are located within the APE.

If during construction archaeological evidence, other than the historic concrete grenade practice structures, is unearthed, then JBSA-Camp Bullis archaeologists and the Texas SHPO will be notified and the unanticipated evidence will be evaluated in compliance with Section 106. Any discovery of possible human remains will be treated in accordance with NAGPRA and the Standard Operating Procedures (SOP) set out in the ICRMP.

3.8.2.2 No Action Alternative

Under the No Action Alternative, no new construction or demolition of the historic concrete grenade practice structures (site 41BX827) would occur; therefore, no adverse effects on cultural resources would occur.

3.9 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.9.1 Affected Environment

Socioeconomics

This socioeconomics section outlines the basic attributes of population and economic activity in the area around JBSA-Camp Bullis, Bexar County, Texas.

Population

Population data for the JBSA-Camp Bullis Proposed Action region in Bexar County, Texas, are shown in Table 3-7. Bexar County, like the state of Texas, grew rapidly (approximately 23 percent) over the last decade. This growth rate was slightly above the 21 percent rate for the State of Texas. The Nation as a whole experienced a much lower growth rate of 9.7 percent from 2000 to 2010.

Table 3-7. Population – Vicinity of JBSA-Camp Bullis, Texas

	Bexar County	City of San Antonio	Texas
2010 Population	1,714,773	1,327,407	25,145,561
2000 Population	1,392,931	1,144,646	20,851,820
Percent Change	23%	16%	21%

Source: U.S. Census 2000 and 2010

Race and ethnicity data are shown in Table 3-8. Bexar County and San Antonio are much more heavily Hispanic or Latino than Texas or the Nation. According to the 2010 Census, approximately 59 percent of Bexar County's population reports being of Hispanic or Latino origin, with 30 percent reporting "white, not Hispanic," and 8 percent Black or African American. Almost 13 percent of the population of Bexar County is foreign born, and almost 43 percent of persons age 5 and above report speaking a language other than English at home.

Table 3-8. Race and Ethnicity – Vicinity of JBSA-Camp Bullis, Texas

Geographic Area	White, Not-Hispanic or Latino (%)	Hispanic or Latino (%)	Black or African American* (%)	Asian* (%)	American Indian and Alaska Native* (%)
Bexar County	30	59	8	3	1
City of San Antonio	27	63	8	3	2
Texas	45	38	13	4	1
U.S.	64	16	14	6	2

Source: U.S. Census 2010

*Race alone or in combination with other races

Note: Totals do not equal 100 percent due to some reporting being of multiple races

As shown in Table 3-9, the percentages of high school and college graduates in Bexar County and the City of San Antonio are in line with those for the State of Texas and slightly below National averages.

Table 3-9. Educational Attainment – Vicinity of JBSA-Camp Bullis, Texas

Percent of Persons Age 25+	Bexar County (%)	City of San Antonio (%)	Texas (%)	U.S. (%)
High school graduates	81	80	80	85
Bachelor's degree or higher	25	24	26	28

Source: U.S. Census 2006

Income and Poverty

Income and poverty data are shown in Table 3-10. Per capita income for Bexar County is well below the U.S. average per capita income. Median household incomes are also below the U.S. average. The poverty rates for Bexar County and the City of San Antonio are estimated to be 16.9 and 18.9 percent, respectively, which are considerably above the National poverty rate of 13.8 percent (U.S. Census 2006).

Table 3-10. Income and Poverty – Vicinity of JBSA-Camp Bullis, Texas

	Bexar County	City of San Antonio	Texas	U.S.
Per capita personal income (dollars), 2009	\$36,465	NA	\$38,601	\$39,635
Per capita income as a percent of U.S., 2009	92%	NA	97.4%	
Median Household Income (2006-2010)	\$47,048	\$43,152	\$49,646	\$51,914
Persons of all ages below poverty level, percent, 2006-2010	16.9%	18.9%	16.8%	13.8%

Source: U.S. Bureau of Economic Analysis 2009 and U.S. Census 2006

Housing

Data on housing units in Bexar County, the City of San Antonio, the State of Texas, and the Nation are presented in Table 3-11. These data show that the homeowner vacancy rate for Bexar County and the City of San Antonio (1.9 percent) are below the Texas and National rates of 2.1 and 2.4 percent, respectively. The rental vacancy rates (9.6 and 9.7 percent) are below the rate for Texas (10.8 percent) and above the National rental vacancy rate of 9.2 percent. The data also show that the percentage of owner-occupied units in the City of San Antonio (56.5 percent) is below the rate for Bexar County (60.5 percent) and well below rates for Texas and the Nation of 63.7 and 65.1 percent, respectively. The data indicate that within the City of San Antonio, an unusually large percentage of homes are occupied by renters versus owners.

Table 3-11. Housing Units – Vicinity of JBSA-Camp Bullis, Texas

Geographic Area	Total Housing Units	Occupied			Homeowner Vacancy Rate* (%)	Rental Vacancy Rate** (%)	Vacant Units for Rent
		Units	Percent Owner Occupied (%)	Percent Renter Occupied (%)			
Bexar County	662,872	608,931	60.5	39.5	1.9	9.6	25,551
City of San Antonio	524,246	479,642	56.5	43.5	1.9	9.7	22,454
Texas	9,977,436	8,922,933	63.7	36.3	2.1	10.8	394,310
U.S.	131,704,730	116,716,292	65.1	34.9	2.4	9.2	4,137,567

Source: U.S. Census 2010

*Homeowner vacancy rate is the proportion of the homeowner inventory that is vacant "for sale."

** Rental vacancy rate is the proportion of the rental inventory that is vacant "for rent."

Labor Force and Employment

The estimated civilian labor force in Bexar County in November 2011 was 787,364. The unemployment rate was 7.1 percent, which is slightly below the 7.5 percent unemployment rate for the state of Texas.

Employment in Bexar County is concentrated in the "healthcare and social assistance," "retail," and "accommodation and food services" categories, as shown in Table 3-12. Together these account for approximately 42 percent of employment in Bexar County, compared to 37 percent for Texas and 38 percent for the U.S. (U.S. Bureau of Labor Statistics 2012). Employment in manufacturing in Bexar County (5 percent) is well below the average for Texas (9 percent) and the Nation (10 percent).

Table 3-12. Employment by Industry Sector (as percent of total)

	Bexar County (%)	Texas (%)	U.S. (%)
Forestry, fishing, hunting, and agriculture support	<1	<1	<1
Mining, quarrying, and oil and gas extraction	<1	2	1
Utilities	<1	1	1
Construction	8	7	5
Manufacturing	5	9	10
Wholesale trade	4	5	5
Retail trade	13	13	13
Transportation and warehousing	3	4	4
Information	3	3	3
Finance and insurance	8	5	5
Real estate and rental and leasing	2	2	2
Professional, scientific, and technical services	6	6	7
Management of companies and enterprises	3	3	2
Administrative support, waste management, and remediation services	7	9	8
Educational services	2	2	3
Health care and social assistance	16	14	15
Arts, entertainment, and recreation	2	1	2
Accommodation and food services	13	10	10
Other services (except public administration)	4	5	5
Industries not classified	<1	<1	NA

Source: U.S. Census 2009

Schools

There are 15 Independent School Districts (ISD) in Bexar County. In the 2010 to 2011 school year, there were almost 313,300 students enrolled in public education institutions in ISDs in Bexar County. San Antonio is home to 14 institutions of higher learning, including the four schools in the Alamo Community College District and 10 four-year colleges and universities. The San Antonio public library system operates 26 public libraries.

Environmental Justice and Protection of Children

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by President Clinton on February 11, 1994. It was intended to ensure that proposed Federal actions do not have disproportionately high and adverse human health and environmental effects on minority and low-income populations and to ensure greater public participation by minority and low-income populations. It required each agency to develop an agency-wide environmental justice strategy. A Presidential Transmittal Memorandum issued with the EO states that “each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by the NEPA 42

USC, Section 4321, et. seq.” The DoD has directed that NEPA will be used to implement the provisions of the EO.

EO 12898 does not provide guidelines as to how to determine concentrations of minority or low-income populations. However, analysis of demographic data on race and ethnicity and poverty provides information on minority and low-income populations that could be affected by the proposed actions. The 2010 Census reports numbers of minority individuals, and the American Community Survey provides the most recent poverty estimates available. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, Pacific Islander, or Other. Poverty status is used to define low-income. Poverty is defined as the number of people with income below poverty levels, which was \$22,314 for a family of four in 2010, according to the U.S. Census Bureau. A potential disproportionate impact may occur when the percent minority in the study area exceeds 50 percent and/or the percent low-income exceeds 20 percent of the population. Additionally, a disproportionate impact may occur when the percent minority and/or low-income in the study area are meaningfully greater than those in the region.

The populations of Bexar County and the City of San Antonio are largely minority (primarily Hispanic). As shown in Table 3-13, Bexar County is 70 percent minority and has more than 25 percent of the population living below the poverty level.

**Table 3-13. Minority Population and Poverty Data –
Vicinity of JBSA-Camp Bullis, Texas**

Location	Minority Population (%)	All Ages in Poverty (%)
Bexar County (TX)	70	16.9
City of San Antonio	73	18.9
Texas	55	16.8

Source: U.S. Census 2006 and 2010

Protection of Children

EO 13045 requires each Federal Agency “to identify and assess environmental health risks and safety risks that may disproportionately affect children” and “ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.” This EO was prompted by the recognition that children, still undergoing physiological growth and development, are more sensitive to adverse environmental health and safety risks than adults. The potential for impacts on the health and safety of children is greater where projects are located near residential areas.

3.9.2 Environmental Consequences

3.9.2.1 *Proposed Action Alternative*

Socioeconomics

The construction of the dormitory and classroom facilities on a 17-acre site at JBSA-Camp Bullis and the renovation of the dining facility would have no permanent negative socioeconomic impacts. The projected increases in military training would have additional trainees moving in and out of JBSA-Camp Bullis, staying for 3-week training sessions. All personnel would be housed on-base. There would be no permanent additions to the population, so few impacts would be expected. There could be minor positive impacts as a result of construction-related hiring and increased revenues for businesses if materials were purchased locally, in addition to increased revenue associated with an increase in expenditures from the additional students.

Environmental Justice and Protection of Children

All construction and renovation activities would occur on JBSA-Camp Bullis. The implementation of the Proposed Action Alternative would create minor beneficial impacts, and there would be no disproportionate or major adverse impacts upon minority or low-income populations. No environmental health risks or safety risks that would disproportionately affect children would be expected, since JBSA-Camp Bullis does not contain military housing for families and the location of the proposed construction would not occur near any schools.

3.9.2.2 *No Action Alternative*

Under the No Action Alternative, the construction of additional facilities would not occur and the number of students being trained would not increase. There would be no socioeconomic impacts or environmental health risks or safety risks associated with this alternative that would disproportionately affect children.

3.10 SAFETY AND OCCUPATIONAL HEALTH

All workers in the U.S. have the right to work under safe and healthy working conditions. The Occupational Safety and Health Act of 1970 was passed to prevent workers from being killed or seriously harmed at work. The law requires that employers provide their employees with working conditions that are free of known dangers. The Act created the Occupational Safety and Health Administration (OSHA), which sets and enforces protective workplace safety and health standards. OSHA also provides information, training, and assistance to workers and employers. OSHA covers private sector employers and employees in all 50 states, the District of Columbia, and other U.S. jurisdictions directly through the Federal OSHA program. State-run health and safety programs must be at least as effective as the Federal OSHA program and must be certified by OSHA. Texas is in OSHA Region 6 and does not have an OSHA-approved state plan, so employers and employees are covered directly through the Federal OSHA program (U.S. Department of Labor 2012a).

Workplace safety also extends to those working for the Federal government. Hazardous Federal worksites are the focus of the OSHA's Federal Agency Targeting Inspection Program 2012. The nationwide program emphasizes workplace safety and health for Federal workers and contractors supervised by Federal personnel. OSHA's Office of Federal Agency Programs represents the Federal sector regarding occupational safety and health issues. It provides Federal agencies with

guidance for implementing effective occupational safety and health programs (U.S. Department of Labor 2012b).

Currently, the overall responsibility for safety and emergency response on JBSA-Camp Bullis lies with the 502d Air Base Wing (JBSA-Camp Bullis 2012a).

3.10.1 Affected Environment

JBSA-Camp Bullis views two of their community and military objectives as promoting and protecting the health, safety, and welfare of nearby residents, as well as military and civilian personnel living and working at or near JBSA-Camp Bullis (City of San Antonio and DoD 2009). JBSA-Camp Bullis currently has three safety office locations; a Joint Base Safety Office, a Range Safety Office, and a Risk Assessments Office. Additionally, the installation maintains both police and fire/rescue services on-site (U.S. Army 2007). All training and operations conducted at JBSA-Camp Bullis are required to submit a risk assessment 10 days prior to arrival which includes a list of all hazards and the appropriate countermeasures that may be employed (JBSA-Camp Bullis 2012a).

Public access is restricted on JBSA-Camp Bullis for the safety of visitors, as well as for security and antiterrorism and force protection requirements. Overall installation access control is implemented through protective measures and specific actions required to reduce security vulnerability. These measures and actions are implemented by all DoD units in accordance with the Force Protection Condition System (FPCON), which details five progressive levels of protective measures, primarily in response to terrorist threats identified through local and national intelligence community assessments. Security requirements above FPCON level NORMAL may result in the curtailment or increased restriction of public access to portions or all of JBSA-Camp Bullis (U.S. Army 2007). Additionally, as a deterrent to prevent intentional or unintentional public trespassing, the perimeter of JBSA-Camp Bullis is enclosed by a six-foot-high, chain-link fence topped with barbed wire.

Firing Ranges

Firing ranges can be a safety concern. Within the JBSA-Camp Bullis training area there are 18 direct fire ranges (largest caliber, 7.62 mm machine gun), which include a multipurpose machine gun range, two automated fire ranges, a live-fire convoy range, a grenade launcher range, two hand grenade ranges, and a heavy demolition range (JBSA-Camp Bullis 2012b). JBSA-Camp Bullis has taken careful steps to ensure that live rounds from training are contained within the confines of the JBSA-Camp Bullis impact area. The loss of .50 caliber training at JBSA-Camp Bullis in the early 1990s was in part due to perceived safety issues expressed by local residents and nearby commercial pilots (City of San Antonio and DoD 2009).

Ordnance

JBSA-Camp Bullis has been an active military training installation for decades, and the possibility of finding unexploded ordnance (UXO) or ammunition on-site exists. UXO is military munitions/explosive ordnance that has been primed, fused, armed, or otherwise prepared for action, and that has been projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material, and remains unexploded either by malfunction or design. UXO present an immediate risk of physical harm from fire or explosion resulting from

the incidental or unintentional detonation. Prior to March 2008, two Explosive Ordnance Disposal (EOD) units, although stationed at JBSA-Fort Sam Houston, conducted their training at JBSA-Camp Bullis. Should UXO be discovered, a USAF EOD team stationed at JBSA-Lackland, approximately 15 miles to the south, would dispose of any UXO found on-site (City of San Antonio and DoD 2009).

Recreational Hunting

Recreational hunting is allowed on-site at JBSA-Camp Bullis and safety support for this activity (firearm and archery) is provided by the Ground Safety Office at JBSA-Fort Sam Houston with assistance from the 502 Air Base Wing, OL-A/Weapons Safety Office located at JBSA-Lackland. All individuals wishing to hunt on JBSA-Camp Bullis are given a safety briefing of instructions and indoctrination on safety restrictions and policies as they relate to the JBSA-Camp Bullis hunting program, and are required to have completed a state-approved hunter education course. Hunting in the cantonment and in the designated impact area is prohibited unless the local commander issues written permission and develops local operating instructions for hunting in such areas. Hunting may be permitted in and around the munitions storage area under certain conditions and if the local commander issues written permission and develops local operating instructions for hunting around munitions storage areas on an installation. Additionally, due to local community encroachment and the limited land mass of JBSA-Camp Bullis, the maximum allowable range for firearms is 4,100 meters, and ammunition exceeding this range is not authorized for recreational hunting at JBSA-Camp Bullis (U.S. Army 2007).

3.10.2 Environmental Consequences

3.10.2.1 *Proposed Action Alternative*

The construction and renovation activities as the result of the implementation of the Proposed Action Alternative would not adversely affect civilian public safety or the safety of military personnel at JBSA-Camp Bullis. All proposed construction/renovation activities would be contractually governed by the civilian contractor companies' Health and Safety Plans. All military training operations have established safety guidelines and procedures that would be implemented or continue with ongoing implementation. These activities would be performed in accordance with applicable safety regulations per 29 CFR 1960, and DoD Instructions 6055, published EO 12196, and all standards prescribed by military requirements.

UXO and chemical warfare material are known to exist within JBSA-Camp Bullis and pose a potential health risk to construction personnel and the general public. UXO may lie on the ground surface or may have penetrated the surface either on land or in the water. Regulations involving UXO fall under the same rules and regulations as at all DoD facilities. A UXO survey was performed for the 17-acre SF Course area by USACE and no UXO discovery is anticipated under the Proposed Action Alternative.

During the construction of the new PEBs, nearby military personnel may experience noise levels that are considered normally unacceptable (up to approximately 400 feet); however, no off-site civilians would be affected by the construction noise of the Proposed Action Alternative.

Live fire ranges, for both small and large caliber firearms, and small amounts of explosives detonation create impact noise at JBSA-Camp Bullis. Recent noise studies indicate that existing

noise contours for small caliber weapons firing at JBSA-Camp Bullis extends approximately 1,640 feet past the eastern boundary and 490 feet past the southern boundary of the installation (City of San Antonio and DoD 2009). Breezy Hill and TS7 ranges would be the ranges primarily used. The range use would double, but the ranges are currently only used at 30 percent capacity. The proposed PEBs would require insulation against impact noise for military personnel training at JBSA-Camp Bullis to ensure that acceptable noise levels are achieved. No adverse impact on the safety and health for the civilian public and military personnel would be anticipated under the Proposed Action Alternative.

3.10.2.2 No Action Alternative

Under the No Action Alternative, no changes to the civilian public safety and military personnel safety would be expected to occur at JBSA-Camp Bullis; therefore, no adverse or beneficial impacts would occur.

3.11 TRANSPORTATION

3.11.1 Affected Environment

JBSA-Camp Bullis is located adjacent to the City of San Antonio and is approximately 21 miles northeast of the downtown area. The installation is situated predominantly in Bexar County, Texas with a small portion of its northern border within Comal County. Intermodal road, rail and air transportation networks connect San Antonio, the county seat of Bexar County and the second largest city in Texas, to other parts of the state and the Nation. The City of San Antonio and JBSA-Camp Bullis share connectivity with Interstate 10 (I-10), linking Houston with Phoenix, Arizona, Interstate 35 (I-35) connecting Dallas and Laredo, and Interstate 37 (I-37), linking San Antonio with Corpus Christi, as well as other U.S. highways, state highways, and rural routes (City of San Antonio and DoD 2009). No public transportation systems or networks provide transportation onto or in the immediate vicinity of JBSA-Camp Bullis, and no rail lines are on the installation.

The gated main entrance to JBSA-Camp Bullis is located on the northern border of the installation with access via Military Highway (Farm to Market [FM] Road 1535), often known as Northwest Military Highway. The gated access entry way is manned 24 hours a day for private and commercial traffic ingress/egress and consists of two inbound lanes and one outbound lane (Fort Sam Houston 2009). Two security personnel are assigned to this gate, and in 2007 the peak traffic flow for the main entrance gate was approximately 270 vehicles per hour at 0600 (U.S. Army 2007). Two additional access entryways exist at Blanco Road and Camp Bullis Road, although these access points are not currently used (Fort Sam Houston 2009). Access to the training areas is restricted to authorized personnel and regulated by the Operations and Range Control office (U.S. Army 2007). The roadway system within JBSA-Camp Bullis is made up of a network of roads and trails with different surface types, including pavement, gravel, and dirt. Roadway widths vary from one-lane to two-lane, with and without shoulders, and all roadways are posted for 25 miles per hour speeds (Fort Sam Houston 2009). The two paved primary roads on the JBSA-Camp Bullis cantonment are Northwest Military Highway and Camp Bullis Road, and most of the buildings on the installation are adjacent to these roads. Other secondary access roads on-site in the cantonment area include New Marne Road, Wilderness Road, and Wilkerson Road. The main access roads to the training areas from the cantonment area are Camp Bullis

Road, Lewis Valley Road, Marne Road, Malabang Trail, and Wilderness Trail. A Programmatic EA completed in March 2004 analyzed access control measures and provided traffic counts for vehicles entering JBSA-Camp Bullis over a 1-week period. During that period, 1,110 vehicles were counted entering through the Northwest Military Highway main entrance gate with a traffic count of 999 vehicles entering Monday through Friday (90 percent) and 111 vehicles entering Saturday through Sunday (U.S. Army 2006).

The installation is regionally bounded by several highways, roads, and interstates; to the north by West Ammann Road, to the east by FM 2696 (Blanco Road), to the south by Loop 1604, and to the west by I-10, as shown in Figure 3-3. Other adjacent roads are Camp Bullis Road, State Highway 46, Borgfeld Drive, and U.S. Highway 281. On the northwest boundary of JBSA-Camp Bullis lies Camp Stanley, which has direct access to FM 3351 and the City of Fair Oakes Ranch. Due to JBSA-Camp Bullis' location, traffic congestion in San Antonio and its surrounding suburbs reflect on the transportation access in and out of JBSA-Camp Bullis. Traffic in the vicinity of JBSA-Camp Bullis is primarily influenced by traffic on I-10 and Loop 1604 (see Figure 3-3). The 2009 Land Use Study listed traffic congestion as a major concern for all of the stakeholders (City of San Antonio and DoD 2009).

Training personnel are not stationed at JBSA-Camp Bullis and generally use either DoD installation buses or passenger vans, as well as privately owned vehicles. Transportation routes used by the JBSA-Camp Bullis trainees are also used by the general public (City of San Antonio and DoD 2009). Bus and van transportation from JBSA-Fort Sam Houston occurs daily and trainees traveling from JBSA-Fort Sam Houston to JBSA-Camp Bullis typically utilize Pershing Road, Broadway Boulevard, Hildebrand Road, Highway 281, Loop 1604, and Military Highway (FM 1535) for ingress to JBSA-Camp Bullis. An alternate route is from Walters Street to I-35 onto I-10 to Loop 1604 to Military Highway (see Figure 3-3). Trainees from JBSA-Lackland generally follow a route from Military Highway to Highway 90 to Loop 410, onto I-10 to Loop 1604 back to Military Highway (see Figure 3-3) (City of San Antonio and DoD 2009). The average daily traffic (ADT) counts in 2010, as compiled by the Texas Department of Transportation (TxDOT), for some of the larger roads used by the JBSA-Camp Bullis trainees are listed below:

- I-10 from downtown San Antonio to west of JBSA-Camp Bullis ranges from 53,000 to 214,000, with counts dropping significantly past Loop 1604
- Loop 1604 ranges from 94,000 to 108,000
- Loop 410 ranges from 101,000 to 208,000
- Highway 281 ranges from 77,000 to 160,000
- Highway 90 ranges from 49,000 to 135,000
- FM 1535 (Military Highway) ranges from 4,200 to 161,000, with counts dropping significantly past Loop 1604

*range of ADT counts shown are from the typical routes used by the trainees as discussed
Source: TxDOT 2010

The San Antonio International Airport (SAT) is located approximately five miles to the southeast of JBSA-Camp Bullis and is the primary airport for the San Antonio Metropolitan Area. The SAT is a two-terminal facility with two all-weather air carrier runways and one general aviation runway, which in 2011 had approximately 260 daily domestic and international flights (SAT

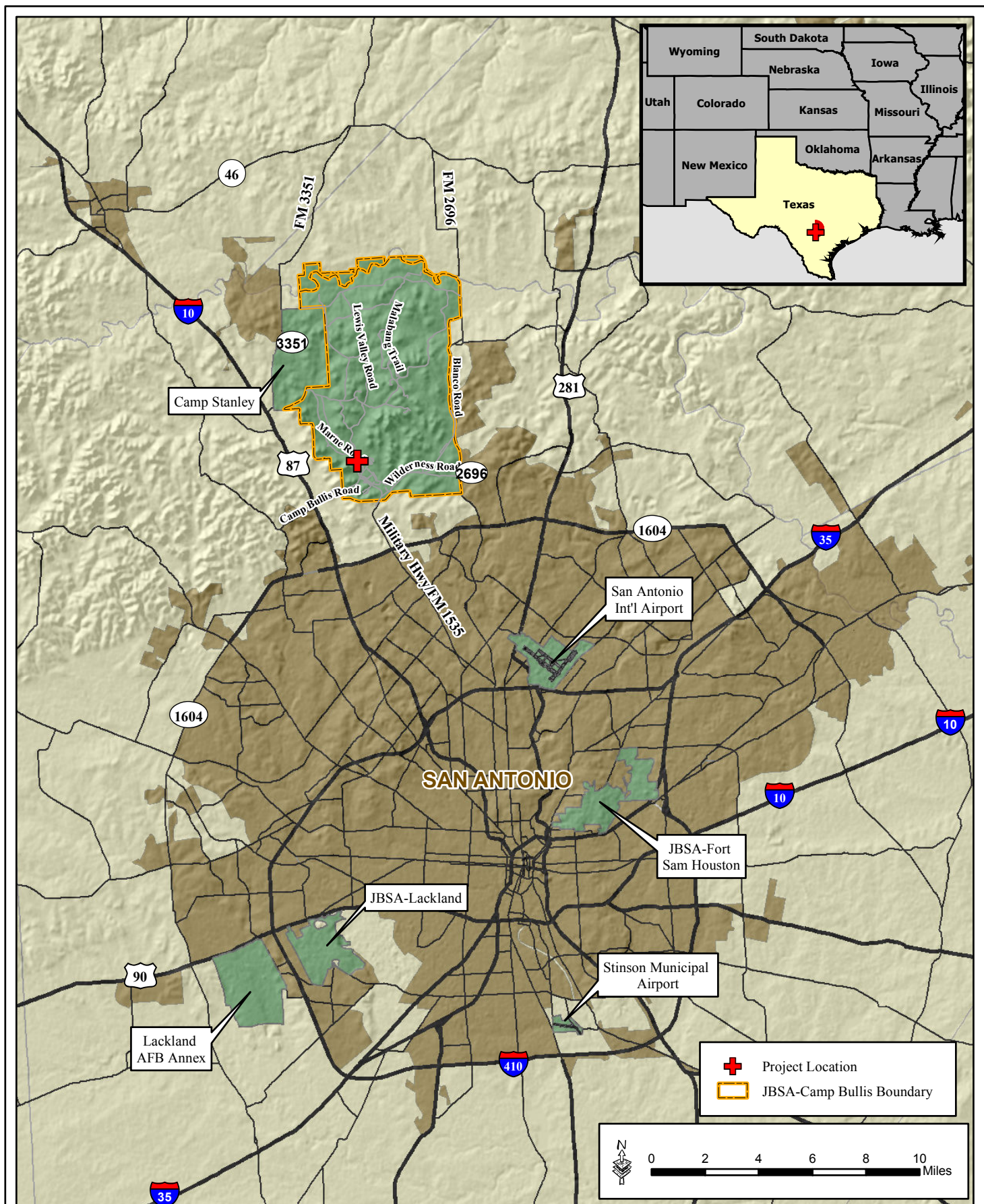


Figure 3-3: Transportation Networks Within and Adjacent to JBSA-Camp Bullis

2012). The Stinson Municipal Airport is located six miles south of downtown San Antonio and is the second oldest general aviation airport in continuous operation in the U.S. It serves local and transient aviation flights and also acts to relieve air traffic at SAT.

JBSA-Camp Bullis has one airfield, the Combat Assault Landing Strip, located in the far northeastern portion of JBSA-Camp Bullis, near its northern and eastern fencelines, which serves primarily C-130 aircraft, but can also support C-17 aircraft (U.S. Army 2006). Helicopters used for training missions enter and exit JBSA-Camp Bullis airspace from four designated areas; the northwest corner near the City of Fair Oaks Ranch (County Line Road – West), the northeast corner along Blanco Road (County Line Road – East), the south-central boundary southeast of the cantonment area (Military Highway), and the southwestern corner just west of the cantonment area (Bullis Road) (City of San Antonio and DoD 2009).

3.11.2 Environmental Consequences

3.11.2.1 Proposed Action Alternative

Under the Proposed Action Alternative, the SF Apprentice Course would accommodate approximately 120 additional new students to train and reside at JBSA-Camp Bullis. These new students would utilize personal vehicles, buses, and passenger vans, similar to the current mode of transport to and from JBSA-Camp Bullis by other students. No new training vehicles would be required for the SF Apprentice Course. Unpaved access roads would be constructed to accommodate vehicle transport to the new training buildings and the new parking lot. However, on a daily basis, most students would walk to and from the dormitories to the new classroom facilities. The Proposed Action Alternative would not affect air transportation either on-site or off-site.

The vehicles needed for the additional training team (approximately 120 students) would not exceed the current capacity of the roadways currently in place; therefore, no long-term impacts on transportation are anticipated. However, under the Proposed Action Alternative, the construction of the new PEBs would cause short-term traffic pattern disruptions on Northwest Military Highway and Camp Bullis Road due to the truck traffic required to haul construction material on-site. Additionally, during construction, an increase in the entrance gate wait time at the beginning of the duty day would potentially occur. These would have minor impacts on overall JBSA-Camp Bullis traffic.

3.11.2.2 No Action Alternative

Under the No Action Alternative, JBSA-Camp Bullis would not construct or renovate buildings at the proposed SF Apprentice Course site, and no change to the current transportation network in or adjacent to JBSA-Camp Bullis would occur. Therefore, no adverse or beneficial impacts would occur on traffic or transportation.

3.12 UTILITIES INFRASTRUCTURE

3.12.1 Affected Environment

The utility systems addressed in this analysis include the facilities and infrastructure used for communications, electricity, wastewater, water, and stormwater.

Potable Water Supply

JBSA-Camp Bullis operates its own water production, storage, and distribution system; its potable water source comes from the Glen Rose and Trinity Group Aquifers. Individual facility usage is not tracked, but metering is provided where the service enters the installation or where it is produced (U.S. Army 2006). Three wells supply potable water to JBSA-Camp Bullis: Nos. 3 and 15, and “DMSET” (Deployable Medical Systems Equipment for Training). Water Well Nos. 3 and 15 produce 0.19 million gallons per day, and the DMSET well production rate is manually operated and restricted to 40 gallons per minute. This controls drawdown from the Glen Rose aquifer while maintaining a minimum water level in the elevated storage tanks. All three wells receive injections of chlorine, fluoride, and phosphate corrosion inhibitor into the raw water supply before pumping to elevated storage tanks. The total storage capacity on JBSA-Camp Bullis is 0.45 million gallons.

Water quality is periodically tested as per the Texas Department of State Health Services requirements. The water testing includes analysis for VOCs, semivolatile organic compounds, pesticides, herbicides, and inorganic chemical constituents (e.g., lead). All three water wells currently comply with the Safe Water Drinking Act (U.S. Army 2006). VOCs have been detected at the DMSET water well and water well No. 15, but concentrations were less than the Maximum Contaminant Level established by USEPA, and the results indicated that the water does not presently pose a threat to human health or the environment (Tetra Tech 2001).

Wastewater

The wastewater collection system at JBSA-Camp Bullis includes 43,000 linear feet of main pipelines and six lift stations that deliver wastewater to the JBSA-Camp Bullis wastewater treatment plant. The wastewater treatment plant (Facility 5920) is designed for a daily flow of 0.68 million gallons per day and two-hour peak flow of 2.48 million gallons per day. The wastewater treatment facilities at JBSA-Camp Bullis include an activated sludge processing plant that uses the conventional aeration mode, and treatment units that include a bar screen, grit chamber, aeration basin, final clarifier, chlorine contact chamber, an evaporating/storage unit, and a system with a spray irrigation system for treated water. JBSA-Camp Bullis operates under a zero-discharge operation permit (TCEQ permit No. 12080-01); JBSA-Camp Bullis redistributes all produced wastewater effluent through irrigation of the nearby firing ranges. Sediment and sludge generated are transported off-site as needed for final disposal (Tetra Tech 2001).

Stormwater System

There is currently no advanced stormwater system in place at JBSA-Camp Bullis; stormwater drainage is generally through natural settings (i.e., interim creeks, valleys, etc) that are enhanced by curbing, parking lots, and ditches. Numerous stormwater structures require repair, upgrade, maintenance, or some combination of the three requirements, and most structures have low hydraulic performance (Fort Sam Houston 2009).

Energy Sources

JBSA-Camp Bullis receives electrical power through City Public Service, and there are currently no contractual limitations on the amount of electricity the installation may purchase. The installation has emergency generators that provide electricity to facilities with sensitive or critical

problems. In addition, JBSA-Camp Bullis uses propane to fuel boilers and heaters on the installation because natural gas services are not available.

Communications

New underground cabling and duct work to support both telephone and data requirements are planned for user growth on the installation. Planned cabling would provide required communications infrastructure to support the SF Apprentice Course and would support all current and planned data and telephone communications transmission speeds.

3.12.2 Environmental Consequences

3.12.2.1 *Proposed Action Alternative*

Implementation of the Proposed Action Alternative would utilize installation resources, including potable water consumption, wastewater generation, and energy consumption, and would generate solid waste. The Proposed Action Alternative would require increased infrastructure to accommodate new construction.

The sewer system within the area would need to be upgraded, and a new lift station is needed; however, these upgrades would occur whether or not the Proposed Action Alternative is implemented. The original concrete collection lines are deteriorated and unreliable and require replacement (Fort Sam Houston 2009). In addition, the vitrified clay pipes installed in the 1930s and 1940s are in fair-to-poor condition and should be replaced (Fort Sam Houston 2009). JBSA-Camp Bullis is expected to increase wastewater flow capacity to three times the current volume (Fort Sam Houston 2009).

The new facilities and parking lot would increase the amount of impermeable ground cover in the area and would affect stormwater absorption and drainage. A stormwater detention pond and compliance with Edwards Aquifer Protection Plan, as per JBSA-Fort Sam Houston and TCEQ requirements, would be needed because the project area is over 5 acres. In addition, Low Impact Development techniques following UFC 3-210-10 will be implemented to handle runoff at its source or point of origination and to mitigate impacts from stormwater runoff.

The dining facility (Defender Inn) would continue to be used, but would need to have the interior renovated, although no expansion is anticipated. The grease trap associated with the Defender Inn would need to be upgraded because it is currently at capacity. There would be an increase in solid waste produced by the dining facility in order to prepare meals to accommodate an additional 120 students.

There are currently no Leadership in Energy and Environmental Design (LEED) certifications required for the new PEBs; however, dark sky lighting requirements are in effect within the project area, so light fixtures would need to be compliant with all regulations.

Demands on utilities (e.g., potable water, wastewater, electricity, propane, solid waste, and construction debris) would increase as a result of the Proposed Action Alternative. However, in the near-term the increased demands that would occur as a result of the Proposed Action Alternative are within the capacity of utilities available at JBSA-Camp Bullis, and therefore the

impacts would be minor. In the future, additional development on JBSA-Camp Bullis could result in necessary expansion of water sources and stormwater system improvements.

3.12.2.2 No Action Alternative

Under the No Action Alternative, no construction or renovation would take place; therefore, no impacts on utilities would occur.

3.13 HAZARDOUS MATERIALS AND WASTES

3.13.1 Affected Environment

The Defense Reutilization Marketing Office is responsible for the disposal of hazardous wastes generated on JBSA-Camp Bullis and, in accordance with Federal and state regulations, hazardous waste is transported off-site for proper disposal within 180 days. The Army's Active Installation Defense Environmental Restoration Program (DERP) was established by Congress in 1986 and provides for the cleanup of DoD sites under the jurisdiction of the Secretary of Defense. At active/operating Army installations, there are two restoration programs which fall under DERP, the Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP). A Hazardous Waste Permit (RCRA Part B Permit HW-50335) was issued to JBSA-Camp Bullis in 1997 for the management of hazardous waste at the Open Burn/Open Detonation unit (munitions site) and the munitions site is also a part of the MMRP. Five MMRP sites were identified at JBSA-Camp Bullis. The small quantities of regulated medical wastes generated at JBSA-Camp Bullis are transported off-site for disposal or destruction by a licensed off-site contractor (USACE 2007). No radioactive materials or wastes are stored on JBSA-Camp Bullis (U.S. Army 2006). JBSA-Camp Bullis also follows an Integrated Pest Management Plan as mandated by PL 104-170, Section 303. Normal application of pesticides is not regulated by the TCEQ and is not considered a waste as defined by the Solid Waste Disposal Act, Texas Health and Safety Code §361. No pesticides or herbicides have been stored or disposed of on JBSA-Camp Bullis beyond limited usable quantities (U.S. Army 2006). As of 2012, three sites - two landfills (Site-08 and Site-17, which consists of seven scattered landfills) and the munitions site - were still being tracked by DERP, as well as tracked, monitored, and mitigated through other JBSA-Camp Bullis programs (U.S. Army 2006 and Smith 2012).

Limited amounts of hazardous materials are stored at JBSA-Camp Bullis, although larger quantities, depending on the needs for specific facilities, may also be found on-site. As of 2012, 12 different hazardous material/waste satellite accumulation sites were located on the base (USACE 2007 and Smith 2012). These hazardous materials range from batteries, petroleum products and wastes, and solvents, to mineral spirits and chlorine. The satellite accumulation site located nearest to the proposed SF Apprentice Course area is found at Facility Number 5424 (Air Force security area), where approximately 30 gallons of solvent are stored (Figure 3-4) (USACE 2007).

As part of the DERP and MMRP, the Open Burn/Open Detonation unit (munitions site), a 0.5-acre site, is located in the south-central portion of JBSA-Camp Bullis, and as of 2012 the site is currently active as an RCRA-permitted facility used to burn or detonate UXO (Figure 3-4; Smith 2012). In 1999, an enforcement action was issued to JBSA-Camp Bullis for non-compliance with the RCRA permit. One of the requirements is the closure of the Open Burn/Open

Detonation solid waste management unit. Groundwater sampling, required by the RCRA permit, has detected the presence of VOCs, semi-volatile organic compounds, metals, explosives, dioxins/furans, perchlorate, and sulfide. Due to the groundwater sampling, which showed statistically significant increases in various contaminants, JBSA-Camp Bullis was required to submit a Compliance Plan and develop a Compliance Monitoring Program. The Compliance Plan was issued by JBSA-Camp Bullis in 2003 and a modification of the plan was issued in 2005 to incorporate the Open Burn/Open Detonation unit with an additional modification currently under way (USACE 2007 and Smith 2012).

Petroleum fuel and products are stored in 13 aboveground storage tanks (AST) of various sizes and two 10,000-gallon capacity underground storage tanks (UST). The two fiberglass-reinforced plastic USTs contain jet propellant (JP-8), and the steel and aluminum ASTs primarily contain No. 2 diesel fuel (U.S. Army 2006). Approximately 100 to 150 gallons of diesel fuel were released in 1999, although not from one of the fuel storage tanks, but from a generator belly tank at Facility 6149. Actions taken shortly after the release resulted in excavation and off-site disposal of approximately 130 cubic yards of impacted soil. The open excavation area was sampled and no fuel-related VOCs were present, although moderate concentrations of total petroleum hydrocarbons remained in the soil. The excavation was subsequently backfilled with clean soils (U.S. Army 2006). As of 2012, although the soils northwest of Facility 6149 contain fuel-related compounds, the concentrations of these compounds are below those that would cause harm to human health or the environment (Fort Sam Houston 2009 and Smith 2012).

The two inactive DERP sites, known as Site-17 and Site-08 (Landfill 8), would also be potentially addressed under the IRP. The IRP was developed to identify, investigate, and manage environmental impacts on military bases under the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or the Superfund Amendments and Reauthorization Act (SARA). Of the two inactive sites on JBSA-Camp Bullis, the IRP has only identified Landfill 8 (Site-08) as an IRP site. Landfill 8 is located between Lewis Creek and Cunningham Hill, and previous aerial photography analysis indicated that the 6-acre landfill was active between 1945 and 1955. In a 1995 assessment of the landfill, chemical agent identification sets (CAIS) were discovered and the Army subsequently removed any CAIS debris found from the landfill surface. As of 2012, no intrusive landfill investigations were done at Landfill 8 due to the nature of potential chemical warfare agent sites (Smith 2012). Non-intrusive investigations have been performed at the landfill, which included surface geophysics and passive soil-gas surveys. Investigations have also been performed outside the delineated landfill, which included sampling of the groundwater, surface water, and sediments and groundwater tracer studies. These investigations performed outside of the landfill site confirmed that no chemical warfare agents were present in the groundwater; however, trichloroethylene (TCE) and other chlorinated VOCs were detected, both in the groundwater and surface water samples, at levels above drinking water regulatory levels. Although there has been no direct link shown between the groundwater and surface water contamination down-gradient from the landfill, there is the potential that this contamination could be from a neutralizing product used on the CAIS that contained solvents. A compliance plan, which included more investigation, monitoring, and response, was put in place as required by TCEQ, and between 1997 and 2001, 21 groundwater monitoring wells were installed. Additionally, monitoring of surface water in nearby Lewis and Salado creeks, and monitoring of JBSA-Camp Bullis water supply wells was

also instituted. Since this time, these sampling programs have shown that no VOCs above drinking water regulatory levels have migrated off-site, and in 2001 and 2004, off-site sampling of water supply wells showed no VOCs in the groundwater, which further suggested that no detectable VOCs have migrated off-site. In 2004, a Work Plan was completed to comply with TCEQ's Texas Risk Reduction Program, which identified further investigations needed to fill gaps in the conceptual site model and to support an Ecological Risk Assessment. Upon the completion of these investigations, an Affected Property Assessment Report and a Response Action Plan for Landfill 8 have been prepared (USACE 2007 and Smith 2012). As of 2012, no groundwater contamination had affected the cantonment area groundwater (Fort Sam Houston 2009 and Smith 2012).

Buildings being renovated or demolished that were constructed before 1978 often have issues with lead-based paint (LBP) and those built between 1945 and 1986 may also have issues with asbestos-containing materials (ACM). Although many of the buildings on JBSA-Camp Bullis were built during these dates, Building 5420 (Defender Inn) was constructed in 1997 (Reifenberg 2012).

Solid waste on JBSA-Camp Bullis is collected and disposed of off-site by a disposal services contractor at a TCEQ-approved and certified solid waste landfill (Fort Sam Houston 2009).

JBSA-Camp Bullis has an SPCCP and an Installation Spill Contingency Plan (ISCP) in place to prevent and minimize impacts from inadvertent release of hazardous materials and it details measures and procedures for spill detection, reporting, containment, cleanup, and disposal procedures, as well as contact information for off-site local, state, and regional spill response resources. Pollution prevention efforts have been implemented at JBSA-Camp Bullis to enable the base to reduce hazardous waste generation. Some of these activities are procedural in nature, while others include product substitutions and waste recycling (Fort Sam Houston 2009).

3.13.2 Environmental Consequences

3.13.2.1 *Proposed Action Alternative*

To ensure that no ordnance would be encountered during land disturbance for the installation of the proposed buildings and the necessary utilities and roads, a UXO survey was conducted. The construction of the Proposed Action Alternative is not anticipated to encounter any UXO or munitions material. Although groundwater contamination exists on-site at JBSA-Camp Bullis, the contaminated groundwater from the Open Burn/Open Detonation unit and Site-08 (Landfill 8) has not impacted the cantonment area groundwater, and therefore no impacts are anticipated. The implementation of the Proposed Action Alternative would also not increase long-term pesticide usage or rates and would not affect the existing pesticide application procedures. No surveys for LBP or ACM are needed prior to the proposed renovations at the Defender Inn, as the age of the building (1997) indicates that LBP or ACM were not utilized in the construction of the dining hall.

As in all construction activities, petroleum, oil, and lubricants (POL) would be utilized to maintain and refuel construction equipment during construction, and the potential exists for accidental releases of POL at the proposed construction site. However, the POL storage will include primary and secondary containment measures. Cleanup materials (e.g., oil mops) will

also be maintained at the site to allow immediate action in case an accidental spill occurs. Drip pans will be provided for stationary equipment to capture any POL accidentally spilled during maintenance activities or leaks from the equipment. In addition, an SPCCP and an ISCP are in place at JBSA-Camp Bullis, and all personnel will be briefed on the implementation and responsibilities of these plans.

Under the Proposed Action Alternative, impacts from solid and hazardous waste and materials would be short-term and minor.

3.13.2.2 No Action Alternative

Under the No Action Alternative, the proposed construction on the 17-acre SF Apprentice Course site would not occur, and conditions at JBSA-Camp Bullis with regard to hazardous materials and wastes would remain. No adverse impacts would occur with the implementation of the No Action Alternative.

SECTION 4.0
CUMULATIVE IMPACTS



4.0 CUMULATIVE IMPACTS

This chapter of the EA addresses the potential cumulative impacts associated with the implementation of the alternatives and other projects/programs that are planned for the region. The CEQ defines cumulative impacts as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7). This section continues: “cumulative impacts can result from individually minor but collectively major actions taking place over a period of time.”

JBSA-Camp Bullis is continuously evolving to meet the demands of the military mission. As a result, construction activities associated with the creation and maintenance of training areas, buildings, and other facilities are continuously occurring. Some of the past and future projects within JBSA-Camp Bullis include:

- Construction and operation of a Basic Combat Convoy Course and Basic Combat Convoy Course with Life Saving Certification
- Repair, alteration, renovation, addition, or construction of new facility space to meet current and future mission requirements
- Vehicle maintenance facility

Impacts on water resources, earth resources, air quality, and noise would be expected to continue with the construction and operation of additional training venues. Construction of facilities for the expansion of the military mission in the foreseeable future, along with the Proposed Action Alternative, could increase environmental impacts. However, these would not collectively cause major environment impacts. The collective sizes of these facilities are smaller than the proposed facilities, which only insignificantly add to the minor environmental impacts resulting from JBSA-Camp Bullis operations.

There are other potential cantonment area and training projects that would replace or enhance facilities on the JBSA-Camp Bullis installation; however, none of the potential projects indicate that there are plans to significantly change the current density of use at JBSA-Camp Bullis. As individual projects become more definitive and the potential for funding support increases, additional environmental analysis would occur.

There are no known planned construction projects or land use changes in the vicinity of JBSA-Camp Bullis along the southwest border. It is not anticipated that the residential construction surrounding the installation, along with the Proposed Action Alternative, would cause a cumulative impact.

4.1 IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

NEPA requires that an environmental assessment include identification of “any irreversible and irretrievable commitments of resources which would be involved in the preferred alternative should it be implemented.” Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future

generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

Under the Proposed Action Alternative, most resource commitments are neither irreversible nor irretrievable because most impacts are short-term and temporary or long-term and negligible. The Proposed Action Alternative would require the use of fuels for vehicle operations as long as construction activities and military activities occur at JBSA-Camp Bullis. Construction or renovation activities would require the expenditure of fuels and other materials at JBSA-Camp Bullis. There would be irreversible or irretrievable commitments of construction materials such as concrete, sand, bricks, and steel, as well as renovation materials such as insulation, wiring, and paint. The use of human resources for facility construction is considered an irretrievable loss only in that it would preclude such personnel from engaging in other work. The use of human resources for the Proposed Action Alternative represents employment opportunities and is considered beneficial.

SECTION 5.0
ENVIRONMENTAL DESIGN MEASURES



5.0 ENVIRONMENTAL DESIGN MEASURES

This chapter describes those mitigation measures that will be implemented to reduce or eliminate potential adverse impacts on the human and natural environment. BMPs are presented for each resource category that would be potentially affected. It should be emphasized that in addition to general BMPs, development of specific BMPs will be required for certain activities implemented under the Proposed Action Alternative. The proposed BMPs will be coordinated through the appropriate agencies and land managers/administrators, as required.

It is Federal policy to reduce adverse impacts through the sequence of avoidance, minimization, and finally compensation. Compensation varies and includes activities such as restoration of habitat in other areas, acquisition of lands, etc., and is typically coordinated with the USFWS and other appropriate Federal and state resource agencies.

5.1 GENERAL CONSTRUCTION ACTIVITIES

BMPs will be implemented as standard operating procedures during all construction activities, such as proper handling, storage, and/or disposal of hazardous and/or regulated materials. To minimize potential impacts from hazardous and regulated materials, all fuels, waste oils, and solvents will be collected and stored in tanks or drums within a secondary containment system that consists of an impervious floor and bermed sidewalls capable of containing the volume of the largest container stored therein. The refueling of machinery will be completed following accepted guidelines, and all vehicles would have drip pans during storage to contain minor spills and drips. Any spill of a reportable quantity will be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock) will be used to absorb and contain the spill. Any reportable spill of a hazardous or regulated substance will be reported immediately to on-site environmental personnel, who would notify appropriate Federal and state agencies. In addition to a SWPPP, an SPCCP will be in place prior to the start of construction, or prior to the start of operation and maintenance of equipment, and all personnel will be briefed on the implementation and responsibilities of this plan. The 17-acre site is located within the Edwards Aquifer Contributing Zone, and therefore an Edwards Aquifer Contributing Zone Plan and an Edwards Aquifer Protection Plan will be prepared, as required by the TCEQ.

All waste oil and solvents will be recycled. All non-recyclable hazardous and regulated wastes will be collected, characterized, labeled, stored, transported, and disposed of in accordance with all Federal, state, and local regulations, including proper waste manifesting procedures. Non-hazardous solid waste (trash and waste construction materials) will be collected and deposited in the on-site receptacles. Solid waste receptacles will be maintained, and waste will be collected and disposed of by a local waste disposal contractor.

5.2 AESTHETIC AND VISUAL RESOURCES

Site layout and landscaping design will be compatible with the existing installation architectural theme and historical context of the site. The architectural style and features of the new facilities will also fit into the natural, park-like setting and complement the other man-made and natural features of the cantonment area. The architecture of the newly constructed PEBs would follow

the architectural compatibility guidelines specified in the Installation Design Guide and landscaping and signage would be chosen to match the installation standards.

5.3 EARTH RESOURCES

During construction, suitable fencing will be installed around the perimeter of the facility to contain vehicles and people and prevent accidental impacts on soils on adjacent properties. Vehicular traffic associated with the construction activities and operational support activities will remain on established roads, to the maximum extent practicable. Areas with highly erodible soils will be given special consideration when designing the proposed project to ensure incorporation of various BMPs, such as straw bales, aggregate materials, and wetting compounds, to decrease erosion. A SWPPP will be developed and implemented to control erosion and runoff during construction, and BMPs including the implementation of Low Impact Development techniques (UFC 3-210-10) will be in place to mitigate short-term impacts. Furthermore, all areas not immediately developed will be planted with native plant species, landscaped, or allowed to naturally revegetate to minimize erosion potential. Construction activities could expose unknown karst features and a qualified karst specialist shall inspect the site for karst features before and after clearing activities and prior to construction activities.

5.4 BIOLOGICAL RESOURCES

The MBTA requires that Federal agencies coordinate with the USFWS if a construction activity would result in any harm to a migratory bird, including breeding and nesting activities. The golden-cheeked warbler and black-capped vireo are managed and studied under the terms of the 28 July 2005 Biological Opinion from the USFWS (U.S. Army 2005b), which include measures necessary to minimize incidental “take” of the golden-cheeked warbler and black-capped vireo. These measures include:

- Minimize harassment and harm of golden-cheeked warbler or black-capped vireo during activities associated with implementing projects and, to the greatest extent possible:
 - Conduct authorized activities during non-nesting periods (August 15 and February 28).
 - Minimize authorized activities within core habitat and adjacent riparian areas or within known nesting territories during nesting and post-fledgling season (March 1 through Aug 14).
 - If activities occur during the golden-cheeked warbler breeding season, a 100-meter noise buffer will be placed around the core golden-cheeked warbler habitat prior to construction or deconstruction/demolition.
 - Allow golden-cheeked warbler and black-capped vireo individuals encountered during authorized activities to move away from activities on their own.
 - Restrict movement of heavy equipment between a project site and establish roadways to minimize habitat disturbance.
 - Conduct surveys annually to facilitate routine operation planning efforts.

- Minimize effects of temporary losses and degradation of habitat of golden-cheeked warbler and black-capped vireo and, to the greatest extent practicable, restore habitat to pre-project conditions by:
 - Designating known occupied habitat for Federally listed species as Environmentally Sensitive Areas, and personnel shall, to the greatest extent possible, avoid such areas;
 - Removing temporary fill, construction and other debris from disturbed areas to restore disturbed areas to pre-project conditions after the completion of activities; and
 - Ensuring compliance with reporting requirements to assist in management decisions that will avoid and minimize effects on golden-cheeked warbler, black-capped vireo, and their associated habitats.

In addition, pre-construction surveys would be performed on the project area to confirm the absence of sensitive species and their habitats. A visual inspection for karst features in the project area and adjacent areas will be conducted before and after clearing and before construction activities. Every attempt would be made to retain viable trees in and around the proposed PEBs. Designs would account for existing groups of live oaks and infrastructure would be designed and constructed in a way that preserves an undeveloped buffer of twice the drip line distance from the existing tree trunks. Under the AETC Forest and Tree Conservation Program, plants located in commercial forests, woodlands, or urban forests that are damaged during construction or related activity shall be replaced between November 1 and April 1 with a one-year warranty at no expense to the government. Trees located on or near the construction site will be considered for saving or replacement and priority is given to trees in good condition that appear on the INRMP list of recommended trees and shrubs. Smaller plants (e.g., shrubs, hedges, or trees up to 5-inch dbh) shall be replaced with plants of equal or greater size, type, and value (including historic value). Larger trees (i.e., greater than 6-inch dbh) damaged during construction that cannot be relocated without a high probability of survival shall be recompensed by a number of smaller trees with an aggregated area of noon shade equal to the noon shade area of the larger tree.

5.5 CULTURAL RESOURCES

During construction, if archaeological evidence other than the historic concrete grenade practice structures is unearthed, JBSA-Camp Bullis archaeologists and the Texas SHPO will be notified and the unanticipated evidence will be evaluated in compliance with Section 106. Any discovery of possible human remains will be treated in accordance with NAGPRA and the Standard SOPs set out in the ICRMP.

5.6 AIR QUALITY

BMPs will include suitable fencing to restrict traffic within the project area in order to reduce soil disturbance. Soil watering will be utilized to minimize airborne particulate matter created during construction activities. Bare ground will be covered with hay or straw to lessen wind erosion between facility construction and landscaping will be designed to prevent or lessen wind fugitive dust creation. Additionally, all construction equipment and vehicles will be kept in good operating condition to minimize exhaust emissions.

5.7 WATER RESOURCES

Standard construction procedures will be implemented to minimize the potential for erosion and sedimentation during construction. All ground disturbance work will cease during heavy rains and will not resume until conditions are suitable for the movement of equipment and material. Because the impact area is greater than 1 acre, as part of the NPDES permit process, a SWPPP and NOI will be submitted to USEPA/TCEQ prior to the start of construction. An Edwards Aquifer Contributing Zone Plan and an Edwards Aquifer Protection Plan will be prepared, as required by TCEQ, in addition to the SWPPP, SPCCP, and PPP. Low Impact Development techniques following UFC 3-210-10 would be implemented to handle runoff at its source or point of origination and to mitigate impacts from stormwater runoff.

Sedimentation and pollution of surface waters by POL will be minimized through the implementation of the SWPPP. The construction of the SF Apprentice Course Facilities will incorporate the proper stormwater retention measures, including a detention pond. All fuel tanks will be double-walled to prevent leaks from entering the groundwater. Proper wastewater disposal will be accomplished by using an on-site wastewater treatment system. Water wells or treated municipal water sources will be used for construction or irrigation purposes instead of natural water sources in order to avoid transmitting disease vectors, introducing invasive non-native species, and depleting natural aquatic systems.

5.8 NOISE

The existing noise level from training activities and small and large caliber arms ranges must be considered in design of new facilities and a noise level reduction of 25-30 dB would be required for sleeping areas. In addition, any new construction should be designed to achieve an interior noise level of 45 dB for areas with noise sensitive uses, such as the dormitories. This could be achieved by using noise level reduction features such as sound absorptive materials and insulation which would reduce the complaint potential.

5.9 SOLID AND HAZARDOUS WASTES

No surveys for LBP or ACM are needed prior to the proposed renovations at the Defender Inn, as the age of the building (1997) does not indicate that LBP or ACM were utilized in the construction of the dining hall. A UXO survey was performed for the 17-acre SF Apprentice Course area, and no UXO discovery is anticipated under the Proposed Action Alternative.

As in all construction activities, POL will be utilized to maintain and refuel construction equipment during construction and the potential exists for accidental releases of POL at the proposed construction site. However, the POL storage will include primary and secondary containment measures. Cleanup materials (e.g., oil mops) will also be maintained at the site to allow immediate action in case an accidental spill occurs. Drip pans will be provided for stationary equipment to capture any POL accidentally spilled during maintenance activities or leaks from the equipment. In addition, an SPCCP and an ISCP are in place at JBSA-Camp Bullis, and all personnel will be briefed on the implementation and responsibilities of these plans.

SECTION 6.0

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6.0 REFERENCES

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SECTION 7.0
LIST OF PREPARERS



7.0 LIST OF PREPARERS

Name	Agency/Organization	Discipline/Expertise	Role in Preparing EA
John Reifenberg	USAF/AETC, JBSA-Lackland	Technical Training Specialist	USAF Project Manager
Lucas Cooksey	JBSA-Camp Bullis	Environmental Planning/Wildlife Biologist	JBSA-Camp Bullis Project Manager
Nicole Forsyth	Gulf South Research Corporation	Environmental Engineering/NEPA	GSRC Project Manager
Chris Ingram	Gulf South Research Corporation	Biology/Ecology	Technical Review
Chris Cothron	Gulf South Research Corporation	GIS/graphics	GIS/graphics
Annie Howard	Gulf South Research Corporation	Environmental Science/Ecology	Earth Resources, Water Resources, Biological Resources, Utilities Infrastructure
Steve Kolian	Gulf South Research Corporation	Environmental Science	Air Quality and Noise
Denise Rousseau Ford	Gulf South Research Corporation	Environmental Engineering/NEPA	Land Use, Aesthetics and Visual Resources, Safety and Occupational Health, Transportation, Hazardous Materials and Wastes
Ann Guissinger	Gulf South Research Corporation	Economics	Socioeconomics and Environmental Justice
Dean Barnes	Gulf South Research Corporation	Cultural Resources	Cultural Resources

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APPENDIX A
AIR QUALITY CALCULATIONS



CALCULATION SHEET-COMBUSTION EMISSIONS-CONSTRUCTION

Assumptions for Combustion Emissions					
Type of Construction Equipment	Num. of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Water Truck	1	300	8	130	312000
Diesel Road Compactors	1	100	8	15	12000
Diesel Dump Truck	1	300	8	15	36000
Diesel Excavator	1	300	8	15	36000
Diesel Hole Trenchers	1	175	8	60	84000
Diesel Bore/Drill Rigs	1	300	8	60	144000
Diesel Cement & Mortar Mixers	2	300	8	60	288000
Diesel Cranes	1	175	8	130	182000
Diesel Graders	1	300	8	15	36000
Diesel Tractors/Loaders/Backhoes	1	100	8	90	72000
Diesel Bulldozers	1	300	8	15	36000
Diesel Front-End Loaders	1	300	8	30	72000
Diesel Forklifts	2	100	8	130	208000
Diesel Generator Set	2	40	8	130	83200

Emission Factors						
Type of Construction Equipment	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	PM-10 g/hp-hr	PM-2.5 g/hp-hr	SO2 g/hp-hr
Water Truck	0.440	2.070	5.490	0.410	0.400	0.740
Diesel Road Compactors	0.370	1.480	4.900	0.340	0.330	0.740
Diesel Dump Truck	0.440	2.070	5.490	0.410	0.400	0.740
Diesel Excavator	0.340	1.300	4.600	0.320	0.310	0.740
Diesel Trenchers	0.510	2.440	5.810	0.460	0.440	0.740
Diesel Bore/Drill Rigs	0.600	2.290	7.150	0.500	0.490	0.730
Diesel Cement & Mortar Mixers	0.610	2.320	7.280	0.480	0.470	0.730
Diesel Cranes	0.440	1.300	5.720	0.340	0.330	0.730
Diesel Graders	0.350	1.360	4.730	0.330	0.320	0.740
Diesel Tractors/Loaders/Backhoes	1.850	8.210	7.220	1.370	1.330	0.950
Diesel Bulldozers	0.360	1.380	4.760	0.330	0.320	0.740
Diesel Front-End Loaders	0.380	1.550	5.000	0.350	0.340	0.740
Diesel Forklifts	1.980	7.760	8.560	1.390	1.350	0.950
Diesel Generator Set	1.210	3.760	5.970	0.730	0.710	0.810
						587.300

CALCULATION SHEET-COMBUSTION EMISSIONS-CONSTRUCTION

Emission factors (EF) were generated from the NONROAD2005 model for the 2006 calendar year. The VOC EFs includes exhaust and evaporative emissions. The VOC evaporative components included in the NONROAD2005 model are diurnal, hotsoak, running loss, tank permeation, hose permeation, displacement, and spillage. The construction equipment age distribution in the NONROAD2005 model is based on the population in U.S. for the 2006 calendar year.

Emission Calculations							
Type of Construction Equipment	VOC tons/yr	CO tons/yr	NOx tons/yr	PM-10 tons/yr	PM-2.5 tons/yr	SO2 tons/yr	CO2 tons/yr
Water Truck	0.151	0.712	1.888	0.141	0.138	0.254	184.290
Diesel Road Paver	0.005	0.020	0.065	0.004	0.004	0.010	7.091
Diesel Dump Truck	0.017	0.082	0.218	0.016	0.016	0.029	21.264
Diesel Excavator	0.013	0.052	0.182	0.013	0.012	0.029	21.276
Diesel Hole Cleaners/Trenchers	0.047	0.226	0.538	0.043	0.041	0.069	49.598
Diesel Bore/Drill Rigs	0.095	0.363	1.135	0.079	0.078	0.116	84.057
Diesel Cement & Mortar Mixers	0.194	0.736	2.310	0.152	0.149	0.232	168.114
Diesel Cranes	0.088	0.261	1.147	0.068	0.066	0.146	106.339
Diesel Graders	0.014	0.054	0.188	0.013	0.013	0.029	21.276
Diesel Tractors/Loaders/Backhoes	0.147	0.651	0.573	0.109	0.106	0.075	54.835
Diesel Bulldozers	0.014	0.055	0.189	0.013	0.013	0.029	21.276
Diesel Front-End Loaders	0.030	0.123	0.397	0.028	0.027	0.059	42.544
Diesel Aerial Lifts	0.454	1.779	1.962	0.319	0.309	0.218	158.342
Diesel Generator Set	0.111	0.345	0.547	0.067	0.065	0.074	53.847
Total Emissions	1.381	5.458	11.338	1.065	1.036	1.370	994.150

Conversion factors	
Grams to tons	1.102E-06

CALCULATION SHEET-TRANSPORTATION COMBUSTION EMISSIONS-CONSTRUCTION

Assumptions for Combustion Emissions								
Pollutants	Emission Factors		Assumptions				Results by Pollutant	
	Passenger Cars g/mile	Pick-up Trucks, SUVs g/mile	Mile/day	Day/yr	Number of cars	Number of trucks	Total Emissions Cars tns/yr	Total Emissions Trucks tns/yr
VOCs	1.36	1.61	60	160	20	20	0.29	0.34
CO	12.4	15.7	60	160	20	20	2.62	3.32
NOx	0.95	1.22	60	160	20	20	0.20	0.26
PM-10	0.0052	0.0065	60	160	20	20	0.00	0.00
PM 2.5	0.0049	0.006	60	160	20	20	0.00	0.00
CO2	369	511	60	160	20	20	78.07	108.12
								186.19

Heavy Duty Trucks Delivery Supply Trucks to Construction Site								
Pollutants	Emission Factors		Assumptions				Results by Pollutant	
	10,000-19,500 lb Delivery Truck	33,000-60,000 lb semi trailer rig	Mile/day	Day/yr	Number of trucks	Number of trucks	Total Emissions Cars tns/yr	Total Emissions Trucks tns/yr
VOCs	0.29	0.55	60	160	2	2	0.01	0.01
CO	1.32	3.21	60	160	2	2	0.03	0.07
NOx	4.97	12.6	60	160	2	2	0.11	0.27
PM-10	0.12	0.33	60	160	2	2	0.00	0.01
PM 2.5	0.13	0.36	60	160	2	2	0.00	0.01
CO2	536	536	60	160	2	2	11.34	11.34
								22.68

Daily Commute New Students Associated with Proposed Action								
Pollutants	Emission Factors		Assumptions				Results by Pollutant	
	Passenger Cars g/mile	Pick-up Trucks, SUVs g/mile	Mile/day	Day/yr	Number of Cars	Number of trucks	Total Emissions cars tns/yr	Total Emissions Trucks tns/yr
VOCs	1.36	1.61	60	365	60	60	1.97	2.33
CO	12.4	15.7	60	365	60	60	17.96	22.73
NOx	0.95	1.22	60	365	60	60	1.38	1.77
PM-10	0.0052	0.0065	60	365	60	60	0.01	0.01
PM 2.5	0.0049	0.006	60	365	60	60	0.01	0.01
CO2	369	511	60	365	60	60	534.32	739.94
								1,274.26

Truck Emission Factor Source: MOBILE6.2 USEPA 2005 Emission Facts: Average annual emissions and fuel consumption for gasoline-fueled passenger cars and light trucks. EPA 420-F-05-022 August 2005. Emission rates were generated using MOBILE 6 highway.

CALCULATION SHEET-TRANSPORTATION COMBUSTION EMISSIONS-CONSTRUCTION

Conversion factor:	gms to tons
	0.000001102

Carbon Equivalents	Conversion Factor
N2O or NOx	311
Methane or VOCs	25

Source: EPA 2010 Reference, Tables and Conversions, Inventory of U.S. Greenhouse Gas Emissions and Sinks;
<http://www.epa.gov/climatechange/emissions/usinventoryreport.html>

CARBON EQUIVALENTS

Construction Commuters	Conversion	Emissions CO2 tons/yr	Total CO2
VOCs	25	15.71	
NOx	311	0.46	
Total		16.17	202.36

Delivery Trucks	Conversion	Emissions CO2 tons/yr	Total CO2
VOCs	25	0.44	
NOx	311	115.62	
Total		116.06	138.74

Daily Commute New Students	Conversion	Emissions CO2 tons/yr	Total CO2
VOCs	25	107.52	
NOx	311	977.23	
Total		1,084.75	2,359.01

CALCULATION SHEET-FUGITIVE DUST-CONSTRUCTION

Assumptions for Combustion Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19 ton PM10/acre-month	MRI 1996; EPA 2001; EPA 2006	
New Road Construction	0.42 ton PM10/acre-month	MRI 1996; EPA 2001; EPA 2006	

PM2.5 Emissions

PM2.5 Multiplier	0.10	(10% of PM10 emissions assumed to be PM2.5)	EPA 2001; EPA 2006
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Control Efficiency

	0.50	(assume 50% control efficiency for PM10 and PM2.5 emissions)	EPA 2001; EPA 2006
--	------	--	--------------------

Project Assumptions

Construction Area (0.19 ton PM10/acre-month,		Conversion Factors	
Duration of Soil Disturbance in Project	6 months	0.000022957	acres per feet
Length	0 miles	5280	feet per mile
Length (converted)	0 feet		
Width	0 feet		
Area	17.00 acres		

Staging Areas

Duration of Construction Project	6 months
Length	0 miles
Length (converted)	0 feet
Width	0 feet
Area	2.00 acres

	Project Emissions (tons/year)		
	PM10 uncontrolled	PM10 controlled	PM2.5 uncontrolled PM2.5 controlled
Construction Area (0.19 ton PM10/ac	19.38	9.69	1.94 0.97
Staging Areas	0.38	0.19	0.04 0.02
Total	19.76	9.88	1.98 0.99

References:

- USEPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.
- USEPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.
- MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

General Construction Activities Emission Factor

0.19 ton PM10/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM10/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM10/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions from Construction Operations, calculated the 0.19 ton PM10/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM10/acre-month) and 75% of the average emission factor (0.11 ton PM10/acre-month).

The 0.19 ton PM10/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM10/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particle (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District and the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM10 and PM2.5 in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM10/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM10/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

0.10

PM2.5 Multiplier

PM2.5 emissions are estimated by applying a particle size multiplier of 0.10 to PM10 emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

0.50

Control Efficiency for PM10 and PM2.5

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM10 and PM2.5 in PM nonattainment areas. Wetting controls will be applied during project construction (EPA 2006).

References:

- EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.
- EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.
- MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

CALCULATION SHEET-SUMMARY OF EMISSIONS

Assumptions for Combustion Emissions										
Emission Source	VOC	CO	NOx	PM-10	PM-2.5	SO2	CO2	CO2 Equivalents	Total CO2	
Combustion Emissions	1.38	5.46	11.34	1.07	1.04	1.37	994.15	3560.77	4554.92	
Construction Site-Fugitive PM-10	NA	NA	NA	9.88	0.99	NA	NA	NA	NA	
Construction Workers Commuter & Trucking	0.65	6.04	0.83	0.01	0.01	NA	186.19	274.56	460.76	
Total emissions-CONSTRUCTION	2.03	11.50	12.17	10.96	2.04	1.37	1180	3835	5016	
Ongoing emissions from new students	4.30	40.69	3.14	0.02	0.02	NA	1274.26	1084.75	2359.01	
Total Operational Emissions	4.30	40.69	3.14	0.02	0.02	0.00	1274.26	1084.75	2359.01	
De minimis Threshold (1)	100	100	100	70	100	100	NA	NA	25,000	

1. Note that Bexar County is in attainment area for all NAAQS (USEPA 2010b).

Carbon Equivalents	Conversion Factor
N2O or NOx	311
Methane or VOCs	25

Source: EPA 2010 Reference, Tables and Conversions, Inventory of U.S. Greenhouse Gas Emissions and Sinks; <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>

APPENDIX B
CORRESPONDENCE



HEARST *media services*

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SAN ANTONIO EXPRESS NEWS AFFIDAVIT OF PUBLICATION

STATE OF TEXAS:
COUNTY OF BEXAR

Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared: Lynette Nelson, who after being duly sworn, says that she is the BOOKKEEPER of THE HEARST CORPORATON (SAN ANTONIO EXPRESS-NEWS DIVISION), a daily newspaper published in Bexar County, Texas and that the publication, of which the annexed is a true copy, was published to wit:

Customer ID: 712041

Customer Name: Gulf South Research Corp.

Order ID: 2302135

Publication
ENROP

Pub Date
21-SEP-12

Lynette Nelson

Lynette Nelson
Bookkeeper

Sworn and subscribed to before me, this 21st day of Sept. A.D. 2012

Notary public in and for the State of Texas

Olivia D. Chaverria



Attach Ad Here

NOTICE OF AVAILABILITY

DRAFT ENVIRONMENTAL ASSESSMENT FOR THE CONSTRUCTION OF FACILITIES IN SUPPORT OF THE 343d TRAINING SQUADRON, 37TH TRAINING GROUP, SECURITY FORCES APPRENTICE COURSE AT CAMP BULLIS, TEXAS

This announcement provides public notification for the availability of the Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) prepared by the U.S. Air Force, 37th Training Group and U.S. Army Corps of Engineers, FortWorth District for the construction of facilities in support of the Security Forces Apprentice Course at Camp Bullis, Texas. The Draft EA evaluates the potential environmental effects of the proposed renovation and construction of facilities on a 17-acre site on Camp Bullis to support the Security Forces Apprentice Course. The Draft EA and FONSI will be available for public review for 30 days beginning Friday, September 21, 2012. Copies are available for review at the following public libraries: San Antonio Central Library, 600 Soledad, San Antonio, TX 78205 and Parman Branch Library at Stone Oak, 20735 Wilderness Oak, San Antonio, TX 78258. Comments or requests for copies should be sent to Mr. John Reifenberg, 37 TRSS/DORX, 1220 Truemper Street, Lackland AFB, Texas 78236.



September 17, 2012

San Antonio Central Library
600 Soledad
San Antonio, TX 78205

Re: Draft Environmental Assessment and Finding of No Significant Impact for the Construction of Facilities in Support of the 343d Training Squadron, 37th Training Group, Security Forces Apprentice Course at Camp Bullis, Texas

Dear Library Director,

The United States Air Force (USAF), 37th Training Group, and US Army Corps of Engineers Fort Worth District have prepared an Environmental Assessment (EA) to identify and analyze the potential impacts of the proposed construction of facilities in support of the Security Forces Apprentice Course on a 17-acre site at Camp Bullis, Texas.

Enclosed is a copy of the Draft EA and Finding of No Significant Impact (FONSI) for the above referenced project. Please make the Draft EA and FONSI available to the public for review through at least 30 days from the Notice of Availability, which begins on Friday September 21, 2012. Please forward any comments concerning the Draft EA to Mr. John Reifenberg, 37 TRSS/DORX, 1220 Truemper Street, Joint Base San Antonio-Lackland AFB, Texas 78236.

Sincerely,

A handwritten signature in black ink that reads "Nicole Forsyth".

Nicole Forsyth
Project Manager

Enclosure: Draft EA and FONSI

Ref: 80306447



September 17, 2012

Parman Branch Library at Stone Oak
20735 Wilderness Oak
San Antonio, TX 78258

Re: Draft Environmental Assessment and Finding of No Significant Impact for the Construction of Facilities in Support of the 343d Training Squadron, 37th Training Group, Security Forces Apprentice Course at Camp Bullis, Texas

Dear Library Director,

The United States Air Force (USAF), 37th Training Group, and US Army Corps of Engineers Fort Worth District have prepared an Environmental Assessment (EA) to identify and analyze the potential impacts of the proposed construction of facilities in support of the Security Forces Apprentice Course on a 17-acre site at Camp Bullis, Texas.

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Sincerely,

A handwritten signature in black ink that reads "Nicole Forsyth".

Nicole Forsyth
Project Manager

Enclosure: Draft EA and FONSI

Ref: 80306447

